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# ARIZONA MEDICINE

*Journal of*  
ARIZONA STATE MEDICAL ASSOCIATION



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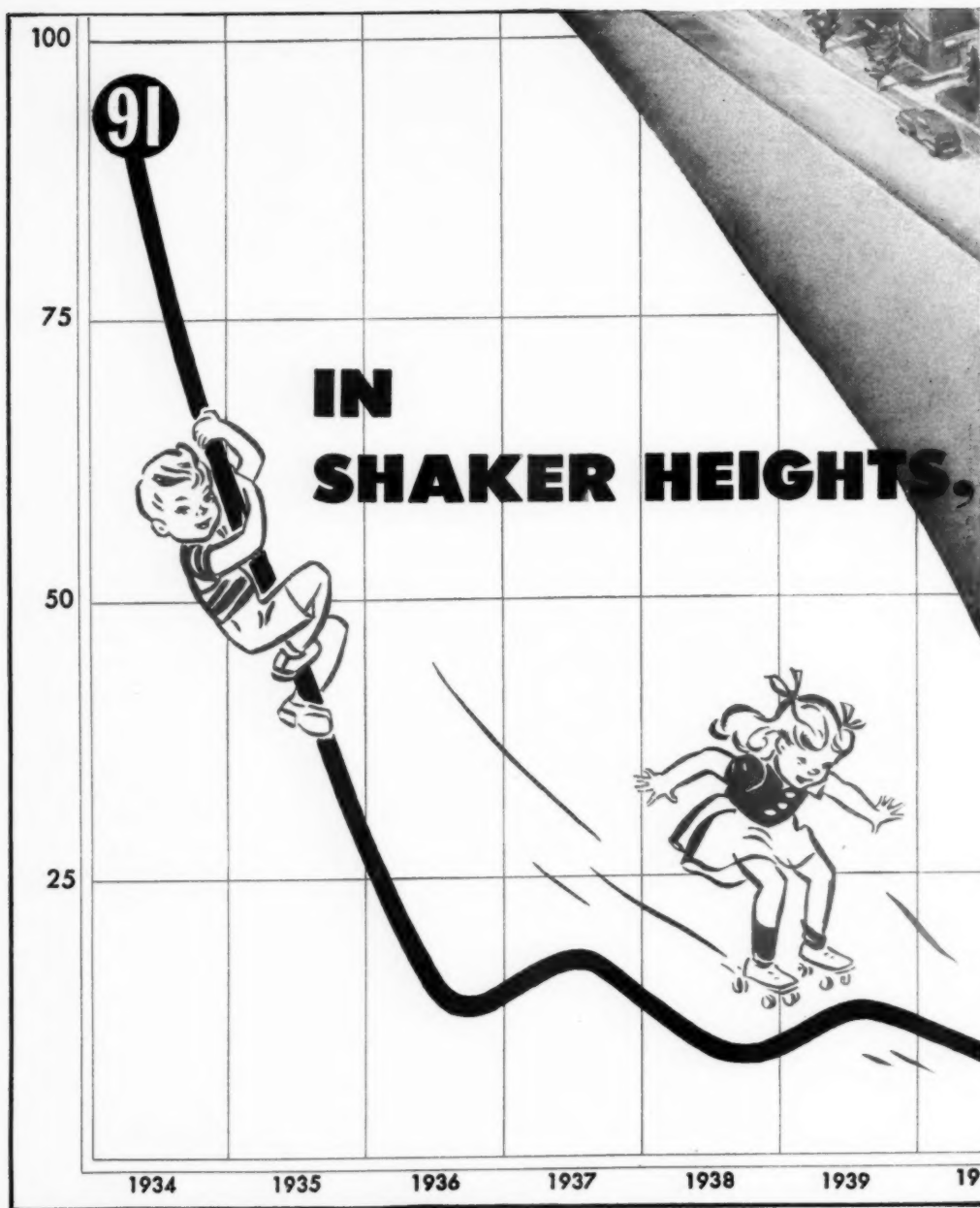
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<sup>1</sup> Garvin, J. A., Ohio State M. J. 41:229, 1945.

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### ARIZONA MEDICINE

Published bi-monthly by Arizona Medical Association at 142 South Central Avenue, Phoenix, Arizona. Subscription \$1.25 per year; single copy 25 cents. Entered as second class matter March 1, 1921, at Postoffice at Phoenix, Arizona, act of March 3, 1879.





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\*Each serving made with 8 oz. of milk; based on average reported values for milk.

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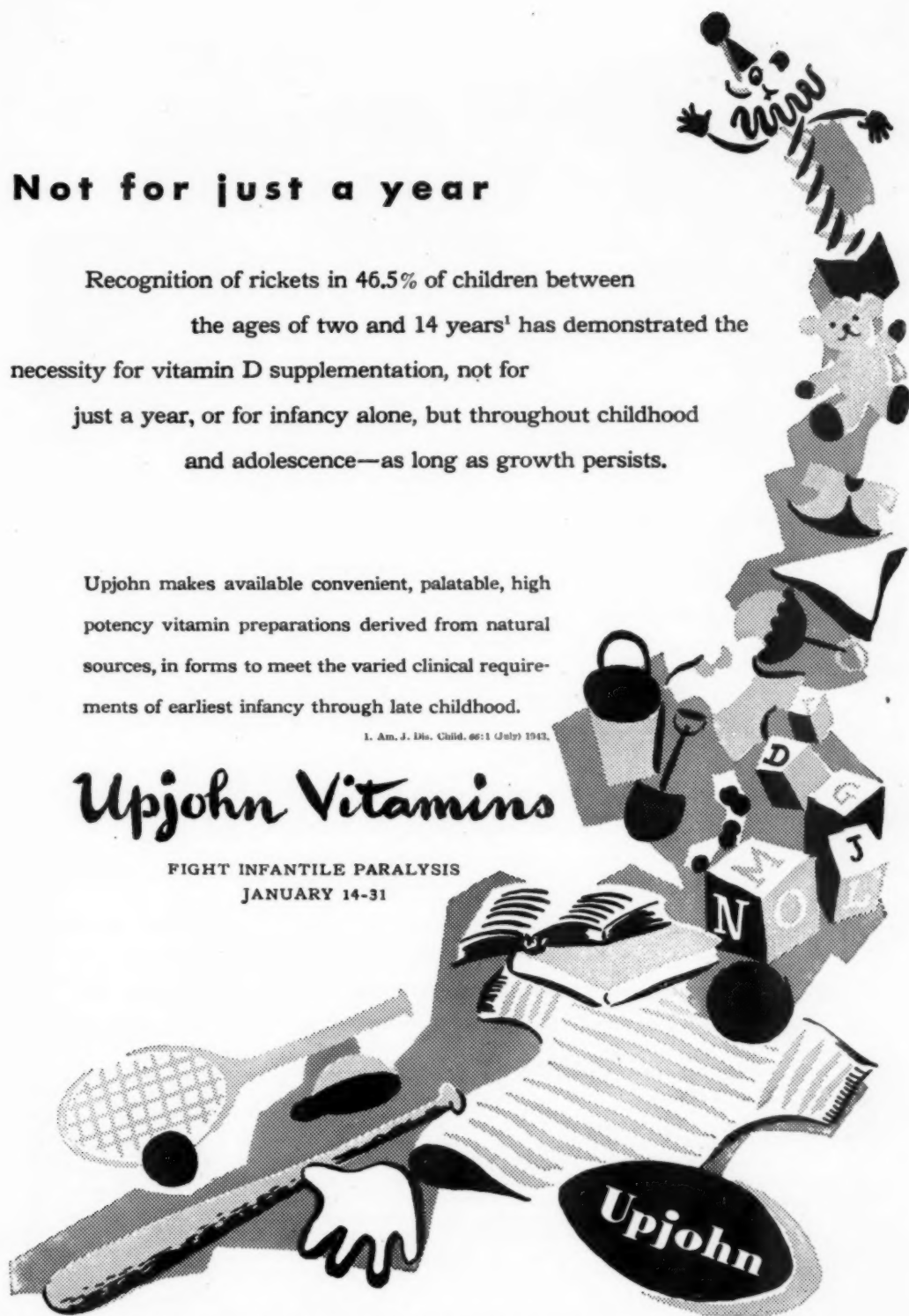
Recognition of rickets in 46.5% of children between  
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1. Am. J. Dis. Child. 66:1 (July) 1943.

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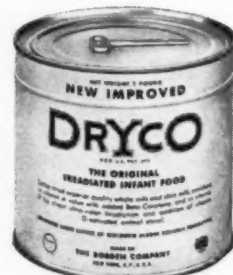
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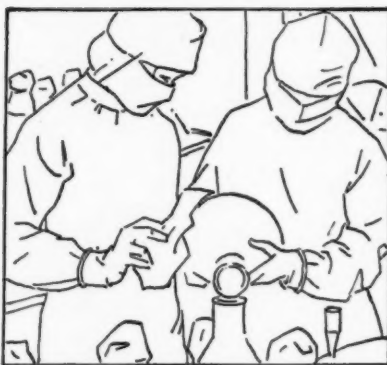
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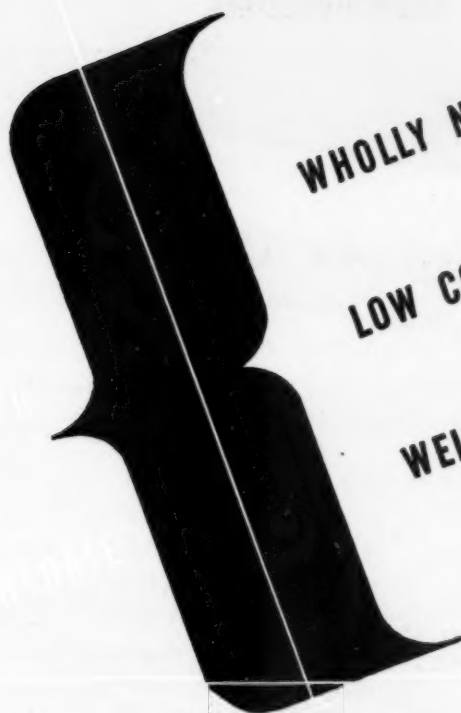
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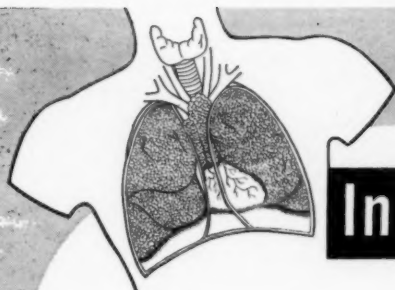
\*Keefer C. S. et al.: New Dosage Forms of Penicillin, J.A.M.A. 128: 1161 (Aug. 18) 1945.

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\*Stainsby, W. J.; Foss, H. L., and Drumheller, J. F.: Clinical Experiences with Penicillin, *Pennsylvania M. J.* 48:119 (Nov.) 1944.

McBryde, A.: Hemolytic Staphylococcus Pneumonia in Early Infancy; Response to Penicillin Therapy, *Am. J. Dis. Child.* 68:271 (Oct.) 1944.

Stainsby, W. J., Chairman, Commission for the Study of Pneumonia Control of the Medical Society of the State of Pennsylvania: Up-to-Date Facts on Pneumonia, *Pennsylvania M. J.* 48:266 (Dec.) 1944.

Larsen, N. P.: Observations with Penicillin, *Hawaii M. J.* 3:272 (July-Aug.) 1944.

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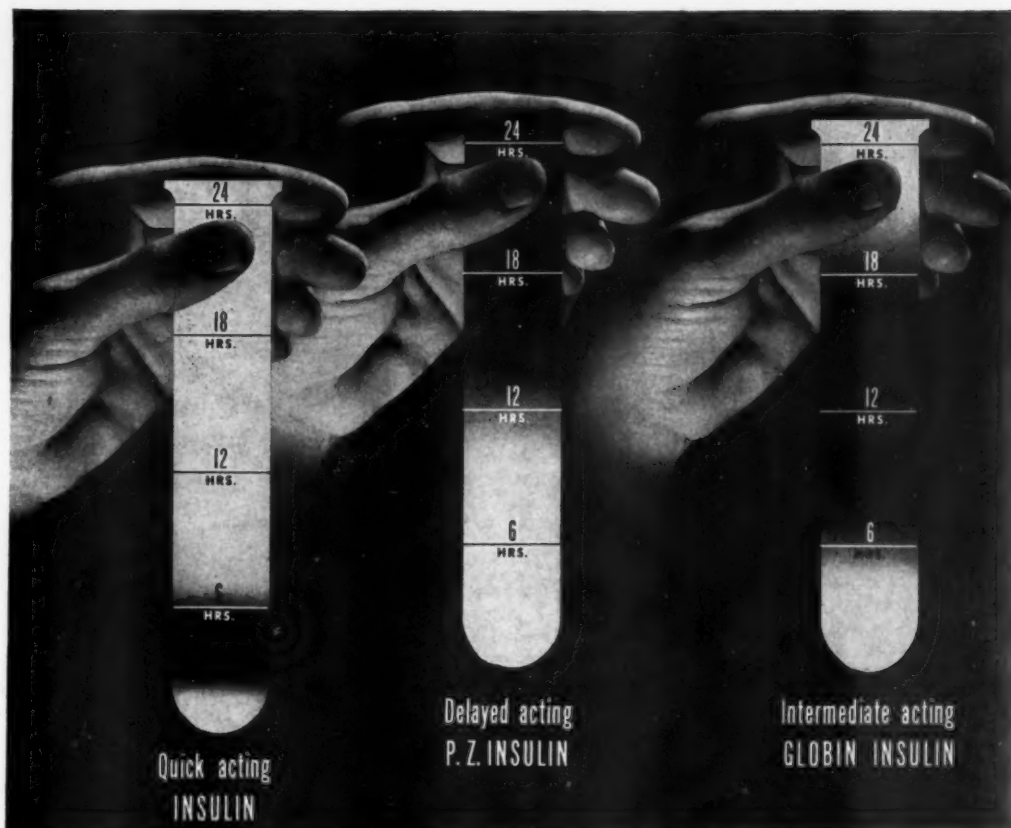
Composition—Dextrins 75% • Maltose 24% • Mineral Ash 0.25% • Moisture 0.75% • Available carbohydrate 99% • 115 calories per ounce • 6 level packed tablespoonfuls equal 1 ounce • Containers of twelve ounces and three pounds • Accepted by the Council on Foods and Nutrition, American Medical Association.

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apparently must be maintained at a level above normal in order to assure proper wound healing\* and at least average resistance against infection.\*\* The feeding of meat, therefore, in adequate amounts, as soon as it can be instituted, appears doubly advantageous: the protein content of meat is high and of highest biologic value; the human digestive tract appears well adapted for handling meat protein.\*\*

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\*\*"Cannon . . . cites the evidence which indicates that diminished protein intake lowers resistance to infectious disease, and corroborates it by his own experiments . . . it seems probable that the small intestine is better adapted for handling protein (especially meat protein) than for other types of food. . . . it is especially well supplied with enzymes which attack protein, and the digestion of meat has been shown to be more complete than that of foods of vegetable origins." (CRANDALL, L. A., Jr.: The Clinical Significance of the Plasma Proteins, Memphis M.J. XIX:147 [Oct.] 1944.)

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in the therapy of  
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Gold has proved its worth during the fifteen years it has been used for rheumatoid arthritis and today, holds a firm position among chemotherapeutic drugs. Clinical reports indicate that improvement may be expected in eighty per cent or more of patients receiving adequate amounts of gold.

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SOLGANAL-B OLEOSUM is a special preparation of organic gold, aurothioglucose. It is water soluble, but suspended in oil to prolong its absorption and enhance its safety. Being an *organic* gold compound, SOLGANAL-B OLEOSUM is less toxic than the *inorganic* gold salts and yet equally efficient.

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The Medical Research Division welcomes inquiries and will supply literature on SOLGANAL-B OLEOSUM dealing with its manner of use, dosage, precaution and toxicity.

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**Antibiotic Nasal Decongestant**  
containing  
**Tyrothricin 0.02% and 'Propadrine' Hydrochloride 1.50%**

**For prompt relief of nasal congestion accompanying:**

- 1 Common Cold**
- 2 Allergic Rhinitis**
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- 5 Acute Ethmoiditis**

**Supplied in 1-ounce bottles with dropper assembly.**

**Sharp  
& Dohme**



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If you would like a supply of sample-size Benzedrine Inhalers—*free of charge and without obligation*—just write "Six Inhalers" on your prescription blank and mail to *Smith, Kline & French Laboratories, Dept. 2, 429 Arch St., Phila. 5, Pa.*

## free!

sample size





1946

## ARMOR AND ARMAMENTARIUM

Guns are silent and grass grows in the foxholes, but there can be no peace treaty in the endless war on mankind's immortal enemy—Disease. Home comes the physician from his lifesaving on the battlefields of man-made death abroad to march again beside his colleagues who have so valiantly held the casemates of health at home.

Battle front and home front, boulevard and dirt road, the mighty facilities of the medical center and the challenge of practice in the lonely farmhouse—all are the front line trenches in humanity's continuing crusade to tame cannibal protoplasm. There is no discharge in that war.

The first cry of pain in the world was the first call for a physician. It has been answered as it echoed down the centuries; it will be answered in the unrolling years of the future.

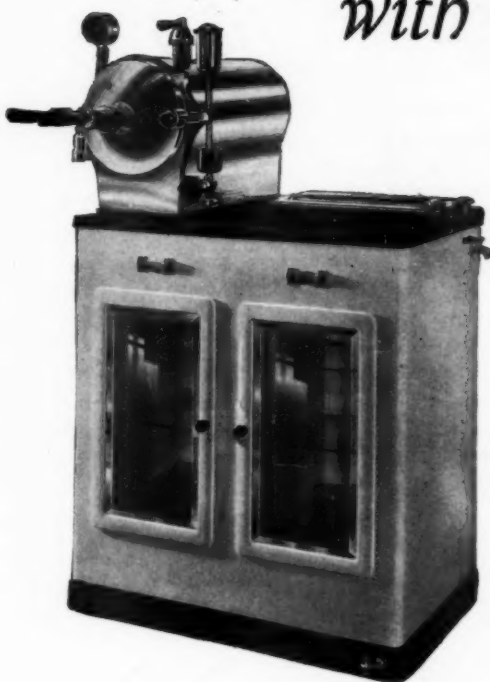
As this questioning year of 1946 opens with the world convalescing from malignant political disease, we would like to claim the privilege of welcoming the thousands of physicians returning from unparalleled service on war fronts—of saluting those who shouldered such heavy burdens at home—of expressing the confidence that the traditional unity of the profession armed with new and potent weapons will drive the front lines of the war on disease ever forward.

We know that we are joined in this expression by all organizations which seek to play their roles, large and humble, as institutions of supply to those "bound by the covenant and oath, according to the law of medicine." S. H. CAMP AND COMPANY, Jackson, Mich.





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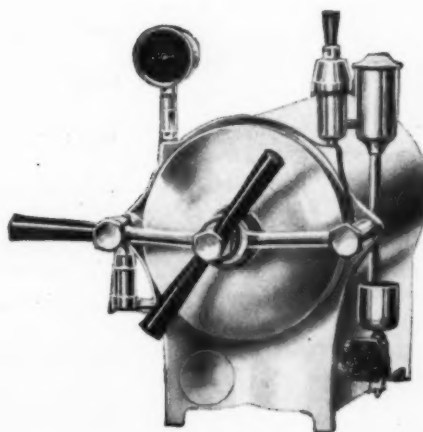


**I**T IS SAFETY that every doctor wants, and knows he should have. A Castle "669" is pleasing to the eye and ample proof of careful technique. True hospital sterilization under your own control . . . freshly sterilized goods and instruments . . . no need of asking favors from the hospital. The perfect unit for the specialist and general practitioner. **CAST IN BRONZE** boiler . . . "Full-Automatic" throughout . . . recessed instrument sterilizer . . . large autoclave . . . spacious double cabinet.

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## MENINGOCOCCEMIA WITH GANGRENE

Report of the Recovery of a Case in which Meningococci Were Found  
in Direct Blood Smears

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**G**ANGRENE of small areas of the skin is not infrequent in meningococcal infections. Large areas of gangrene of the skin and of the extremities have been reported in only a few cases.<sup>1 2 3 4</sup>

Borger<sup>5</sup> states that a bacteremia so overwhelming as to present organisms free in the blood stream in such numbers that they can be found on a direct blood smear offers little hope of recovery. The finding of meningococci in direct smears of the peripheral blood has been reported in fatal cases<sup>4 5 6</sup>, and in only one recovered case<sup>14</sup>.

The case reported herein survived even though large numbers of meningococci were demonstrated in direct blood smears. This case is of further interest because the skin of 15 per cent of the body surface was gangrenous, and amputation of the 5th left little finger and of both legs was necessary because of the gangrene.

### REPORT OF CASE

A white male aged 20 years was admitted to the Station Hospital, Camp Wolters, Texas, 3 June 1944, complaining of a slight headache and severe pains in his feet.

The past history revealed that in childhood he had measles, scarlet fever which was complicated by otitis media, malaria and "typhoid fever".

The present illness began ten hours before admission with a rigor followed by malaise, slight frontal headache, generalized muscular aching and pain in his feet. He had been unable to sleep because of this pain. He denied experiencing nausea, vomiting, sore throat or a stiff neck.

Examination revealed a seriously ill, well-nourished white male who was mentally clear. The oral temperature was 100.2 F, and the respiratory rate was twenty per minute. The blood pressure was 96/54. There were several areas of purpura and numerous petechiae scat-

tered over the entire body, which were more profuse on the lower extremities. A few petechiae were present in the conjunctivae and nasal mucosa. The pharynx was slightly injected; the neck was supple; and the heart and lungs were normal. Neurological examination revealed no abnormalities. The trunk and head were warm and pink; whereas, the hands and feet were cold, tender, cyanotic and mild edema was present. Pulsations were absent in the dorsalis pedis, posterior tibial and radial arteries; while at the same time, pulsations were present in the temporal arteries. The remainder of the physical findings were normal.

A large number of intracellular diplococci were noted at the time the differential blood count was done. Additional smears revealed that these diplococci contained several gram-negative extracellular diplococci resembling meningococci. The leukocyte count was 24,300 per cubic millimeter with 65 per cent immature neutrophils, 30 per cent adult neutrophils and 5 per cent lymphocytes. Blood and throat cultures yielded meningococci which were identified by agglutination reaction.

The red blood cell count was 5 million per cubic millimeter. The hemoglobin was 16 grams per hundred cubic centimeter, and the platelet count was 200,000 per cubic millimeter. The clotting and bleeding times were 3½ and 3 minutes respectively. The urine contained albumin (two plus); and the sediment contained five to ten casts, five to ten white blood cells, and a rare red cell per high power field. An electrocardiogram was normal except for a rate of 150 per minute.

During the first two hours of hospitalization 500 cubic centimeters of 1/6 molar lactate solution, 5 grams of sodium sulfadiazine and 1,000 cubic centimeters of 5 per cent glucose in saline were administered by venoclysis. The pain in the feet was so severe that 11 milligrams of morphine sulfate with 0.6 milligrams of atro-

pine were given. During this two-hour period the blood pressure had dropped from 90/50 to 78/46. Eight cubic centimeters of adrenal cortex were administered intravenously and 2 cubic centimeters intramuscularly, followed by 500 cubic centimeters of plasma. Two and one-half hours after admission, 15,000 Oxford units of penicillin were administered intramuscularly and 15,000 units intravenously. These doses were repeated in three hours. Penicillin, 15,000 units, and adrenal cortex, 5 cubic centimeters, were given every three hours.

The pain in the feet returned with such severity eight hours after admission that it was necessary to repeat administration of morphine. The petechial rash was more profuse and had begun to coalesce, especially on the feet. Pulsations of the dorsalis pedis, posterior tibial and radial arteries were palpable but of small volume. The feet were warm, tender, very cyanotic and swollen. His breathing became labored and oxygen was administered by means of a tent.

Ten hours after admission the blood pressure was 70/40. Five hundred cubic centimeters of plasma were given. The lowest blood pressure, 60/40, was recorded twelve and one-half hours after admission. Two hours later, 500 cubic centimeters of 5 per cent glucose and 5 per cent soda bicarbonate were given by venoclysis. The blood pressure rose to 100/64. The posterior neck muscles were first noted to be mildly rigid, and there was occasional vomiting. Three hours later the purpuric areas were much larger, the swelling of the hands and the feet was more marked, and the pulsations of all the arteries were normal.

During the first twenty-four hours the blood pressure varied between 100/50 and 60/40; the pulse varied between 100 F and 102 F. His urinary output was 3,000 cubic centimeters. During this period the patient was given 135,000 units of penicillin, 7 grams of sulfadiazine, 3,000 cubic centimeters of saline and glucose, 39 cubic centimeters of adrenal cortex, 1,000 cubic centimeters of plasma and oxygen.

The purpura ceased to develop after the first day, at which time the skin of approximately 40 per cent of the body surface was involved. There were large areas of extravasation of blood into the skin of the legs (fig. 1), the thighs (fig. 2), buttocks, back, arms (fig. 3), and finger tips (fig. 2) as well as smaller areas

over the entire body. The feet were less painful, and they were cooler than the rest of the body.

A spinal paracentesis was done on the second day because of the presence of a mild rigidity of the posterior neck muscles and a positive Brudzinski sign. The spinal fluid was cloudy, and the pressure was 18 millimeters of mercury. The cell count was 1,590 per cubic millimeter with 71 per cent polymorphonuclear cells. Chemical analysis showed 56 milligrams of sugar, 325 milligrams of proteins and 4.4 milligrams of sulfadiazine per 100 cubic centimeter of the spinal fluid. The blood non-protein nitrogen was 54; the chlorides were 379; and the sulfadiazine concentration was 10 milligrams per 100 cubic centimeter of blood. The carbon dioxide combining power was 64 volumes per cent.

The treatment during the second day consisted of 125,000 units of penicillin given intramuscularly, 15,000 units of penicillin given intrathecally, 10 grams of sulfadiazine given by mouth, 2,000 cubic centimeters of saline and glucose solutions (intravenously) and 44 cubic centimeters of adrenal cortex extract (intramuscularly).

The general condition was good on the third day. Herpes simplex of the lips was present. Ice bags were applied to the feet to aid in the relief of the pain. The toes and the tip of the left little finger were blue-black in color with diminished temperature, but the sensations of touch, pain and temperature were only slightly reduced.

The third day the erythrocyte count was 3.6 million and the hemoglobin was 11.4 grams per one hundred cubic centimeters. The leukocyte count was 8,750 per cubic millimeter with 75 per cent polymorphonuclear cells. There were 5 grams of total protein per one hundred cubic centimeters of plasma. Therapy of this day included 6 grams of sulfadiazine (orally), 100,000 units of penicillin (intramuscularly), 6 cubic centimeters of adrenal cortex, 1,000 cubic centimeters of 1/6 molar solution of sodium lactate and oxygen. Eighty-nine cubic centimeters of adrenal cortex were given during the first forty-eight hours before its use was discontinued.

Necrosis of the skin was present in some of the purpuric areas on the fourth day. The blood urea nitrogen was 23 milligrams per 10 cubic





Figure 1.—Second day of the disease.  
 Figure 2.—Second day of the disease.  
 Figure 3.—Third day of the disease.

Figure 4.—Fifth day of the disease.  
 Figure 5.—Twelfth day of the disease.  
 Figure 6.—Thirty-third day of the disease.

millimeters of blood. The spinal fluid contained 1,500 cells per cubic millimeter, of which 71 per cent were polymorphonuclear cells. Organisms were not found in the smears or in the culture of the spinal fluid. Fifteen thousand units of penicillin were given intrathecally and 100,000 units were given intramuscularly.

The red cell count on the fifth day was 3.4 million, and the hemoglobin was 9.5 grams per 100 cubic centimeters of blood. The total blood proteins were 5.3 grams per 100 cubic centime-

ters. There was a gradual reduction in the urea nitrogen from 35 milligrams per 100 cubic centimeters of blood to normal on the eighth day.

Sulfadiazine was discontinued the sixth day because of an elevation in temperature up to 104 F and an erythematous rash, which were thought to be due to the drug. The total dose of sulfadiazine was 35 grams.

During the next three weeks there were intermittent attacks of mild diarrhea and a rapid



loss in body weight. Four transfusions, totaling 1,500 cubic centimeters of blood, were given. The lowest temperature recordings each day were 99 F to 100 F, and there was a daily elevation up to 101 F to 104 F. The leukocyte count remained within normal range. One hundred thousand units of penicillin were given daily until the fourteenth day when the dose was changed to 50,000 units daily.

The most striking feature in this case was the evolution of the skin lesions which were ultimately responsible for the sloughing of large areas of skin and gangrene of both feet.

The petechial and small purpuric areas present on admission became more numerous and enlarged, coalescing to involve approximately 40 per cent of the body surface.

On the second day there were large areas of light and dark purple discolored skin as a result of the extensive extravasation of blood (figs. 1, 2). The following day, large areas of the skin were definitely gangrenous (fig. 4). These areas were most marked in the areas where the intracutaneous extravasation of blood had been the most prominent.

The involved skin became hard and dry with a texture about like that of leather, and in many respects was similar to "tannic acid eschars", (fig 5), which contracted producing wrinkling. By the twelfth day it was obvious that this contraction was producing undue pressure on the surviving underlying tissues of the toes and in the left little finger (fig. 5). Application of lanolin several times daily failed to keep the gangrenous skin soft or pliable, so boric acid and saline packs were applied continuously to the feet. In order to determine the course of the process, wet packs were not applied to the left little finger until several days later when it was apparent that the contraction and wrinkling of the dry dead skin would destroy deeper viable tissue.

The skin of 15 per cent of the body surface became gangrenous. The hard black crusts of varying sizes on the arms, buttocks and legs gradually peeled off leaving healthy appearing ulcers. On the eighteenth day a small amount of green pus with a foul odor began to exude from under the gangrenous skin on the dorsum of the feet. This pus contained mixed organisms with bacillus pyocyaneus and anaerobic streptococci predominating. One cubic centimeter of tetanus antitoxin and 20,000 units

of gas gangrene antitoxin were given. On the twenty-second day azochloramide was used in the wet dressing in an attempt to reduce the foul odor. On the twenty-fifth day it was obvious that amputation would have to be done because of the gangrene of the distal one-half of the feet.

The patient was admitted to Lawson General Hospital on 11 August, 1944 for surgical treatment. The necrotic areas extended up to the proximal third of each leg (fig 6), but the knee joint areas were not involved. The necrosis extended through the deep layers of the skin, varying in depth from superficial to deep. The bones of the feet were exposed. Necrotic areas were present on the antero-lateral aspect of each thigh, both buttocks, the distal portion of each fore-arm, the arm just superior to the elbow, the 5th finger of each hand, the distal portion of each thumb, and the little finger of the left hand. The red blood cell count was 4,800,000 and the leukocyte count was 5,350 per cubic millimeter; the hemoglobin was 85 per cent; the clotting time was 2½ minutes; the bleeding time was 1½ minutes; and the urine was normal. The total blood proteins were 8.4 grams per cent with an A/G ratio of 3.7/4.7.

The first guillotine amputation through the middle third of the left leg was accomplished on 16 August, 1944. The small areas of skin remaining on the amputated portion were removed with a Blair knife and used to cover the remaining denuded areas of the stump and the lateral aspect of the thigh.

On 28 August, 1944 the total blood proteins were 6.7 grams per cent, and the A/G ratio was now 4.4/2.3 grams per cent. On 31 August, 1944 the total proteins were 7.2; the A/G ratio was 3,700,000 and the leukocyte count was 3,950 per cubic millimeter; and the hemoglobin 68 per cent.

A guillotine amputation, mid-leg level of the right leg was done on 27 September, 1944. A blood transfusion was given following the operation. At the time the surgery was being done it was noted that there was less than the normal amount of bleeding from the skin vessels however, deeper vessels of the limb appeared normal in every respect. The stumps healed rapidly, and there was approximately a 100 per cent take of the skin grafts which had been secured from the amputated portions of the leg. Throughout this period the patient

was on a high-caloric, high-vitamin intake; and there was an increase of body weight.

During the latter part of October, 1944, the patient developed moderate pyuria and hematuria. Investigation revealed bilateral renal lithiasis measuring 1 centimeter in diameter in the pelvis of each kidney. Intermittent bouts of fever, ranging to 103.2 F resulted. This was treated with moderate doses of sulfadiazine. On 27 November 1944 the red blood cell count was elevated to 4,600,000 and the leukocyte count was elevated to 7,000 per cubic millimeter with hemoglobin of 93 per cent. The urine persistently showed white blood cells in varying amounts and an occasional trace of albumin.

On 18 April 1945 a plastic revision of the right stump was carried out. The postoperative course was uneventful, and on 1 June 1945, a prosthesis was ordered. On 30 May 1945 the patient developed rather severe left urethral colic and subsequently passed a calculus. Roentgenograms revealed the absence of the stone formerly present in the left kidney.

A plastic revision of the left stump was completed on 21 June 1945. These revisions resulted in satisfactory stumps. The areas where skin was grafted on the thighs did not require further surgery. The 5th finger of the left hand was amputated at the middle third of the middle phalanx.

#### DISCUSSION

It is our opinion that this is the first report of the survival of a case of meningococcemia in which numerous meningococci were demonstrated in the routine direct blood smears. Hayes and Whalen<sup>14</sup> report the survival of a case in which the pathologist demonstrated meningococci in the blood smear after repeated examinations.

Necrosis of small areas of skin in the centers of the petechial and purpuric lesions of meningococcal infections occur frequently, 14 per cent of our series, but large areas of gangrene of the skin are only occasionally seen<sup>1 2 3 5 7</sup>. Various authors<sup>1 2 7 8</sup> have expressed theories as to pathogenesis of the skin lesions, yet the actual pathological physiology and pathology remains unknown. Bernstein<sup>9</sup> believes that these lesions are due to peripheral thrombosis, embolic or autochthonous, or peripheral vasospasm from an exotoxin. These emboli may be composed of bacteria<sup>9</sup>. Other factors which may interfere with the blood supply are edema, perivascular

hemorrhage, intracellular infiltration of cells, and slowed circulation resulting from the low blood pressure incident to the shock. Another factor which played a role in this case was the spasm of larger blood vessels (dorsalis pedis, posterior tibials and the radials) which persisted for several hours. If we were to meet the latter condition in another case, we would try to relieve the vasospasm by paravertebral blocking of the lumbar sympathetic nerves.

The treatment of severe meningococcal infection has been recently summarized by Thomas<sup>4</sup>. The treatment of "Waterhouse-Friederichsen Syndrome" has been reviewed<sup>10 11</sup>. The present concept of the treatment of meningococcal infections includes the use of sulfonamides, orally and intravenously; penicillin, intramuscularly, intravenously, intrathecally, intrapericardially<sup>12</sup> and into joint cavities; parental fluids including sodium lactate; plasma and adrenal cortex. It is our opinion, gained from the management of shock in eleven cases of fulminating meningococcemia that adrenal cortex, plasma or whole blood, and saline are of value in the treatment of the "medical shock". The use of adrenal cortex is still only empirical. In our case we believe that the early use of penicillin played some role in the recovery in that the sulfonamides are known to have some latent period before its action is effective<sup>13</sup>. The ultimate clinical response to penicillin has been reported<sup>15</sup> to be slower than to the sulfonamides. Hence, it is believed that both drugs should be used early in severe cases with sulfadiazine, if tolerated, continued after the critical phase has passed.

#### SUMMARY

The recovery of a case of fulminating meningococcemia with severe and unusual complications is reported.

The bacteremia of this case was so severe that many meningococci were present in direct smears of the peripheral blood.

The early treatment of this case included the intravenous administration of penicillin, sulfadiazine, adrenal cortex, saline, glucose solution and plasma. The sulfadiazine was also given orally and the adrenal cortex and penicillin were given intramuscularly.

The complications in this case were moderate shock; angiospasm of the dorsalis pedis, posterior tibial arteries; extensive purpura with intracutaneous hemorrhages; gangrene of 15

per cent of the skin and extensive gangrene of the left little finger and the feet.

The extensive gangrene in this case necessitated the grafting of skin to several large areas and the surgical amputation of the distal one-half of the left little finger and both legs.

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## DISSEMINATED LUPUS ERYTHEMATOSUS

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**D**ISSEMINATED lupus erythematosus is a disease with which, because of the presence of skin lesions, dermatologists have long been well acquainted and in which, because of the involvement of many organs, the internists have developed an increasing interest within the last 10 to 15 years. The disease was first described by Kaposi in 1872 and until recent years was thought to be a rare condition. However, more cases of this disease are being diagnosed nowadays than in years gone by, perhaps because the condition has received more recognition and the diagnosis is not missed as often as in the past.

As has been stated, disseminated lupus erythematosus is a disease which may involve any or all parts of the body and is not confined to the skin. The cause of the disease is not known. The symptoms, physical findings and laboratory data may vary from case to case, but the overall picture is apt to be rather characteristic. An upper respiratory infection may seem to initiate some cases, whereas others seem to be precipitated by sunburn so that photosensitivity is thought to be a factor of importance. The patient is nearly always a young woman in the second or third decade of life who has led an active existence up to the onset of the illness. Only 10% to 20% of the victims of this disease are men.

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Unusual fatigue and weakness overtake the patient in an insidious manner. Then it is usually discovered that the patient has bouts of fever. Exacerbations and remissions are the rule. Pains in the joints occur frequently and rheumatic fever is, of course, brought to mind. Pleuritic pains are not uncommon. Abdominal pain, nausea, vomiting, and diarrhea are frequent symptoms.

When the patient is examined an eruption is usually present even in the very early stages. Less frequently the eruption appears during a later stage of the disease, and in rare instances the eruption may never appear. The eruption usually first presents itself on the face, especially over the nose and in the so-called "butterfly area". It is an erythema, the form of the lesions varying and therefore being classified in the erythema multiforme group. The lesions are also commonly seen on the fingers and hands and less frequently about the elbows, knees, ankles, and other areas. The skin lesions frequently take on a hemorrhagic character when the disease enters its more severe and terminal stages.

Physical examination may reveal also a polyserositis with fluid in the joints, peritoneal, pleural and pericardial cavities. Sometimes a temporary dry pleurisy or pericarditis is detected. Heart murmurs may indicate the pres-

ence of an endocarditis or valvulitis. Examination of the eye grounds usually reveals rather characteristic perivascular hemorrhages, fluffy exudates, and circumpapillary edema.

Laboratory data are very helpful in establishing the diagnosis. Outstandingly important is a leukopenia which can be detected in every case at one time or another. The differential leucocyte count is normal. Anemia, mild to severe, is present. The erythrocyte sedimentation rate is moderately to greatly increased. The urine may be normal early in the course of the disease; sooner or later erythrocytes and albumin and casts are usually found. A transient positive Wassermann reaction sometimes occurs. The electrocardiogram is usually normal but sometimes indicates toxic myocarditis. The serum protein is apt to be low due to the loss of serum albumin. Therefore the albumin-globulin ratio may be slightly abnormal.

The pathological findings are rather characteristic. It is noteworthy that endothelial-lined structures are attacked, that is the capillaries, small arteries and veins, the endocardium, and the synovial and serous membranes. The vascular lesions include (1) a simple dilatation of the capillary beds, (2) proliferative lesions of the endothelium with thrombi which often block the lumens of the vessels and (3) degenerative and necrotizing lesions which are especially conspicuous in the kidneys. The renal glomeruli frequently show a characteristic peculiar hyaline thickening of the subendothelial layers of the capillary walls which appear thick and rigid as though composed of a heavy wire—the so-called "wire-loop" lesion, which is an important criterion for the pathological diagnosis. An endocarditis is often present. It may be similar to the usual types of bacterial endocarditis or it may show coarse verrucous vegetations of the

type described by Libman and Sacks. Aschoff bodies are not found in the myocardium. Peripatient. The sulfonamide drugs and penicillin carditis and plueritis are frequently present and a terminal bronchopneumonia is common.

In the differential diagnosis many other vague disorders must be considered. Among these are rheumatic fever, sub-acute bacterial endocarditis, tuberculosis, typhoid fever, undulant fever, and periarteritis nodosa, to mention only a few.

The prognosis is nearly hopeless. Nearly all of these patients are dead within five years after the diagnosis is made.

The treatment is designed to support the patient. The sulfonamide drugs and penicillin have been found to be useless in this condition, except to prevent secondary infections. The diet should be unrestricted, and high in proteins, calories, and vitamins. The loss of albumin through the kidneys explains the need for extra protein. The vitamin B deficiencies which accompany prolonged febrile diseases make replacement of this substance necessary. The patients often present a low blood level of vitamin C, and in those cases extra amounts of this substance must be administered. Salicylates are very useful to help maintain a sense of well-being, and to reduce the fever. Transfusions of whole blood help to overcome the anemia, and whole blood and plasma help to reduce the edema and effusions. Administration of preparations of serum albumin intravenously should likewise be useful for this same purpose. In the presence of a failing heart all intravenous and parenteral fluids must be given with great caution and very slowly. Adequate nursing care completes the therapeutic program designed to prolong the lives of these unfortunate persons.

## THE FROG TEST IN THE DIAGNOSIS OF EARLY PREGNANCY

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and

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**T**HE South African clawed frog, *XENOPUS LAEVIS*<sup>1</sup>, has been used as a test animal for several years and is rapidly replacing the rabbit in the diagnosis of pregnancy by means

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of a qualitative test for the presence or absence of gonadotropic hormones in the urine. After trying several methods of urinary hormone concentration, we finally found that a Scott's<sup>2</sup> method was superior to all others in accuracy,



ease of preparation of the reagents and the fact that concentrates so prepared were less toxic to the animals. This method is also more rapid because it is not necessary at any time to dry the precipitates of volatile solutions such as are employed in other concentration methods. In over three hundred tests, using our modification of Scott's method, we obtained an accuracy of 99.2% without the loss of a single test animal, due to faulty technique or toxicity of the concentrate.

#### EQUIPMENT

Galvanized tanks 24x16x16 inches, staggered in sets of three in suitable racks are ideal containers for the test animals. The tanks have a short drain tube of one-half inch galvanized pipe at one end onto which is threaded a metal cap. The interior of the drain hole is fitted with a cork and the water is kept at seventy degrees Fahrenheit or average room temperature, at a depth of four inches.

The entire top of the tank is covered with a one-half inch wire mesh hinged frame which affords complete ventilation. The water is changed daily in the tanks by attaching a short piece of garden hose to the drain tube on the outside and removing the cork on the interior, thus draining the tanks by gravity. At the same time a brush is used to wash down the sides of the tanks. Our experience has shown that each tank of this size will accommodate from fifteen to twenty frogs, depending upon the size of the animals. As the frogs mature and increase in size they are frequently rearranged so that one tank contains large animals, one tank medium animals and the third tank the smallest animals. In addition, several two and one-half gallon glass aquaria are kept on hand and used as test tanks. When a positive test occurs and there are eggs on the bottom of the glass aquaria, they may be removed easily as follows. After the test animal is removed and put back into the metal tank the wire mesh on the bottom of the glass aquarium is turned over so that it lies flat as possible on the bottom. A strong solution of chlorox is poured into the glass tank and gently swished around for a few minutes. Ova, sloughed skin and fecal material are easily dissolved. The tank is then rinsed thoroughly through several changes of tap water and dried. Some workers prefer to burn the ova off the wire grate, using a Bunsen burner. We have tried this method and while

satisfactory, it is not so quick or thorough as the clorox method. The use of clorox also disinfects the test tanks.

#### IDENTIFICATION

We have tried several methods of isolation and identification of the *XENOPUS LAEVIS* in order to obviate the necessity of keeping each animal in its own separate tank. We tried numbered tags attached to the hind leg by means of a short cord, and engraved surgical sutures attached to the web of the hind foot. We divided the large metal tanks into several single compartments, but these were too small to house the animals properly. All these methods failed completely. The method we now use and which has been employed successfully is as follows:

Each animal is given a number or symbol. This number or symbol is then tattooed on the light-colored ventral surface of the upper hind leg by means of an electrical tattooing apparatus, the same kind of machine as is used by seafaring men the world over. The initial tattoo is legible four or five weeks, after which a second identical tattoo is done over the original number or symbol if necessary. The second tattooing has so far been permanent, and legible for a period of two years. We tried both red and black ink, and found the black tattooing ink to be more permanent and more easily read. With this method of identification of test animals it is possible to store them in metal tanks in groups without any possible confusion as to their identity. When a frog is desired for testing she is identified by her number, scooped up in a small net and removed to a two and a half gallon glass aquarium. The day after the test is completed she is returned to the large metal tank.

Some workers suggest that the test animal be fed twice a week, while others feed them every day. We have tried both methods and find that ground beef heart used interchangeably with ground beef liver and given twice a week will keep the frogs well nourished. It is best to place fresh water in the tanks prior to each feeding and change the water again after feeding, giving them approximately twelve hours or over night to eat as much as they need. If no food remains after this period of time, the ration should be increased the next feeding. We change the water daily in the large metal tanks.



### COLLECTION OF SPECIMEN

We have made it a point to ascertain from the patient the number of days since the last menstrual period. We have found that a minimum of fourteen days past a missed period will insure a higher accuracy in the test. We have on occasions run the test when there has been no missed period, but have done so only at the specific request of the physician. In these instances, however, we make it clear to the doctor and the patient that the accuracy cannot be relied upon unless the test is positive. If the test is negative, it should be repeated when the patient is fourteen days past the missed period. The patient is instructed to restrict her fluid intake to the absolute minimum from three P.M. of the day before the specimen is collected until the following morning. A minimum amount of eighty cubic centimeters of urine is brought to the laboratory in a clean (but not necessarily sterile) bottle. It is best to instruct the patient to refrain from taking any medication for a period of forty-eight hours prior to collection of the specimen and under no circumstances should a test be run on a specimen from a patient who is known to have had injections of any gonadotropic hormones less than seven days prior to collecting the specimen for testing. The urine specimen should preferably have a specific gravity of 1.017 or higher, although we have had positive tests on specimens with a specific gravity much lower.

### PREPARATION OF THE CONCENTRATE REAGENTS:

#### BROM-PHENOL BLUE INDICATOR:

Dissolve 400 mg. of the powdered dye in 15cc of N/20 Sodium Hydroxide and dilute to 100cc with water.

#### 20% KAOLIN

Suspend 20 gms. of pure Kaolin in 100cc of distilled water.

#### 20% HYDROCHLORIC ACID

#### 5% HYDROCHLORIC ACID

#### DEXTROSE, C. P.

#### SQUIBB'S NITRAZINE PAPER

Place 80cc of filtered urine in a 250cc cylinder, add 80cc of distilled water and 0.8cc of brom-phenol blue indicator. The contents of the cylinder are thoroughly mixed by inversion and adjusted to a pH of 4 with 20% hydrochloric acid. The hydrochloric acid is added a drop at a time and the contents of the cylinder mixed

by inversion after the addition of each drop. When the proper pH is reached the color changes from purple to a faint blue-green. It is important not to add an excess of acid, bringing the pH below 4. This can be noted if the specimen assumes a bright yellow to amber color without a definite green tint on the outer portion of the cylinder. The color changes upon the addition of 20% hydrochloric acid must be viewed by transmitted light passing through the cylinder at eye level and it has been our experience that this is best done in front of a window with the shade completely up, holding the cylinder horizontally. It will be noted that although the specimen, when at a proper pH viewed through transmitted light has a bluish-green color, it has by reflected light, a definite bluish-purple color.

When the proper pH is reached, 8cc of a 20% Kaolin suspension are added and the contents of the cylinder thoroughly mixed by several inversions. The cylinder is left to stand until the Kaolin falls to the 10cc mark. The supernatant fluid is then drawn off and discarded by means of a Chapman suction pump, leaving approximately 1cc to resuspend the Kaolin by slight shaking of the cylinder. This suspension is then poured rapidly into a 15cc test tube and the cylinder drained against the side of the tube for one minute. The suspension is centrifuged at a rate of fifteen hundred revolutions per minute for sixty to ninety seconds. The supernatant fluid is then poured off and discarded by inverting the test tube completely. To the packed Kaolin in the test tube are added 2cc of N/10 Sodium Hydroxide and the contents of the test tube thoroughly mixed and macerated with a seven millimeter glass rod having a smooth rounded end. Care should be taken to emulsify the Kaolin thoroughly with the Sodium Hydroxide. The tube is again centrifuged at twenty-five hundred revolutions per minute for three to five minutes and the supernatant fluid drained into a test tube 100x13mm. The packed Kaolin is now discarded and the concentrate is adjusted to a Ph of 5.5 - 6.5 by the addition of 5% Hydrochloric acid, using Nitrazine paper as an indicator. 0.5 gms. of pure anhydrous dextrose is then added to the concentrate. Solution is hastened by warming the tube in the hands and stirring its contents with a wooden applicator.

### INOCULATION OF THE ANIMAL

It is advisable, when removing the frogs from the rest tanks, to dry off the animals with a towel, thus enabling the operator to handle them easier, and eliminate the wearing of cotton gloves. Inoculation is best done by two workers, one to hold the frog immobile while the other makes the injection. If the second person is not available to hold the frog, she can be placed in a towel with her head completely covered and the hind legs and dorsal posterior exposed. In this position it is relatively easy for a single operator to make the injection. As long as the frog's head is well covered with a towel, she will make no effort to jump when the injection is made. One cubic centimeter of the concentrated specimen is inoculated into the dorsal lymph space about one-half inch above the cloacal folds. Inoculation is made at right angles to the mid-dorsal lines using a 26 gauge 3/8 inch needle on a two cubic centimeter syringe. Inoculation is made just under the skin and the needle should be seen clearly during the inoculation. The animal is now put into the test tank or glass aquarium jar with water at the three inch level, containing a piece of half-inch galvanized mesh wire, one-half inch above the bottom to prevent the frog from eating the eggs if oviposition occurs. The frogs remain in the test tanks until the following morning when the results are noted. If the test is negative, another frog is inoculated, using the remaining 1.0cc of concentrate which has been kept in the refrigerator. It is necessary to warm this second portion to room temperature before inoculating it into the second frog. If after eighteen hours no eggs are extruded by the second frog, the test is reported as negative.

In our record book we keep one sheet for each frog. The sheet is ruled into five columns which are headed as follows:

Patient's Name	Doctor	Date Inoculated	Reaction	Date Can Be Used Again
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This way a complete record of each animal is always at hand and can be readily checked. The frogs giving a negative test are given a rest of ten days and then may be used again. All frogs that extrude ova are rested thirty days before using them again.

Regardless of the source of supply we have always found it necessary to test the animals with a known positive urine from an early

pregnancy in order to eliminate those animals that do not react, irrespective of previous tests made by the jobber.

### RESULTS OBTAINED IN OVER THREE HUNDRED TESTS

Correct Positive: 156  
Correct Negative: 195  
Incorrect Positive: 0  
Incorrect Negative: 3  
Number of Tests Run: 354  
Percentage of Accuracy: 99.2%

In this series of tests, all patients were fourteen days or more over-due in their menses.

### ANALYSIS OF FALSE REACTIONS

CASE 1: Two frogs were inoculated, both with negative results. Two rabbits were inoculated by another laboratory, two days prior to our work, with both tests reported as negative. Subsequent clinical examination showed the patient was in the first trimester of pregnancy at the time the four tests were run. We are at a loss to explain four false negative tests, on any other grounds than that the patient did not excrete enough gonadotropic hormones in the urine to give positive tests on either rabbits or frogs.

CASE 2: In this case only one animal was used because of insufficient amount of urine specimen. The test was negative. After ten days, the physician requested another test. We decided to use the same frog again. The second test was negative. Another frog was inoculated on the same day and extruded several hundred eggs. The first frog was undoubtedly ill though she appeared healthy at the time of the inoculation. This frog was rested for a period of two months and again inoculated with urine from a known pregnancy with positive results.

CASE 3: Two frogs were inoculated, both giving negative results. Several days later the physician reported that the patient had aborted.

### SUMMARY

It is evident from the foregoing cases that two frogs must be used in order to obtain a high percentage of accuracy. Had there been a sufficient amount of urine in Case 2, it would not have been necessary to repeat the test at a later date. Further, by using two test animals for each specimen submitted one can readily check on the animals giving false negative tests. These animals should be rested for at

least two months, keeping them well nourished and thus returning them to a state of good health, when they will give reliable results. We have found that this technic is relatively simple, time saving and highly accurate. This modification has the advantage of speed over any other recognized test used in this laboratory. The test is highly accurate. The concentrate so prepared is non-toxic and animals inoculated with it slough no skin or mucus as they often

do with concentrates prepared with other methods. The cost of material used in this method is considerably lower than in all other methods tried.

1. For more detailed information concerning the biology of the *XENOPUS LAEVIS*, the reader is referred to the excellent treatise "The South African Frog (*XENOPUS LAEVIS*) in Pregnancy Diagnosis" by Weisman and Coates, New York City, New York and "Use of *XENOPUS LAEVIS* for Pregnancy Testing" by Louis C. Herring, American Journal Medical Tech., Vol. 10; No. 3; May '44.

2. Scott, L. D. The concentration and Detoxification of Human Urine for Biological Pregnancy Diagnosis (Use of *XENOPUS LAEVIS*). Bri. J. Exper. Path. 21: 3320; 1940.

## THE BLUE CROSS, THE HOSPITAL, THE PHYSICIAN

NORMAN A. ROSS, M. D.

*President, Board of Directors, Arizona Blue Cross*

### *The Blue Cross*

**D**URING a recent staff meeting at St. Joseph's Hospital, Phoenix, Sister Mary Eucharia, Superintendent, spoke about the work being done by the Arizona Blue Cross and urged the support of the physicians. The comments elicited by this talk indicated that some have not realized the intent and purpose of the Blue Cross nor the job that is being done in Arizona. This is probably a state-wide situation, hence a little additional comment on the Arizona Blue Cross may bring all to realize what a going concern this hospital service in Arizona is proving to be.

Blue Cross Hospital Service is a national plan for providing hospital care at the lowest possible cost on a strictly non-profit basis. The plan is open to employed persons who pay into it a monthly subscription fee and receive, in return, not money but the hospital care set forth by the service as benefits. Blue Cross differs from other hospital coverage in this respect, there being a guarantee of service rather than an insurance. The method of operation is simple—the Board of Directors lay out the system of benefits and rates, set up an administration, and govern the disbursement of funds. An Executive Director is employed with a staff to carry out the program. There is no profit to the Board, directly or indirectly; no bonuses or commissions to either board or employees.

Arizona has had this popular Blue Cross Hospital Service Plan since November, 1944. Previous to that time, the Associated Hospital Service was organized in 1939 and after a "spurt" of business remained dormant until it

stepped forward and received Blue Cross endorsement and approval by reducing the rates to subscribers and increasing the benefits. The plan is incorporated as the Associated Hospital Service of Arizona under the recently enacted Medical and Hospital Service measure, enactment of which was secured by our medical association in view of inaugurating a medical service plan comparable in benefits and rates to the Blue Cross Hospital Service. By receiving approval and endorsement from the National Blue Cross, the local service has the constant guidance of that body and is kept fully informed as to Blue Cross activities and advancements the country over. The local Blue Cross, in turn, is obligated to submit financial reports and full administrative data to the national body at frequent intervals in order to hold the approval granted. It must at all times be shown that rates remain down and benefits up so far as the subscriber is concerned.

Arizona Blue Cross has proved that people, here as elsewhere, like to budget for their hospital care and "prepay" the necessary costs of hospitalization for the individual and his family. This is not merely an idea but an established fact, for the Arizona Blue Cross has enrolled over 300 groups through which 20,000 people have been able to remove the uncertainty of costs of necessary hospitalization. This has been accomplished in Arizona since November, 1944—and we expect this growth to continue at this same rate if not increased.

### *The Hospital*

Blue Cross is a triad so far as its service is concerned for through its ministrations the subscriber, the hospital and the physician are

served. Sister Mary Eucharist pointed out that Blue Cross is the only hospitalization plan in the state sponsored and guaranteed by the hospitals. It was further pointed out that Arizona Blue Cross is an institutional member of the American Hospital Association and is fully approved to enter into contracts with participating hospitals. The subscriber receives the hospital care and the hospital receives its payment directly from Blue Cross funds accrued from subscription fees. In its first year of operation the Arizona Blue Cross paid more than \$43,000.00 to the hospitals for its subscribers. Blue Cross has heretofore been welcomed by hospital administrators as a method for regularizing hospital income and as a means for alleviating the hospital's most distasteful problem—that of collecting charges for hospital services rendered.

#### *The Subscriber*

The patient who enters the hospital with a Blue Cross card is usually a better patient by reason of the fact that his convalescence is not retarded by worry over accruing hospital costs. The subscriber-patient, or member of his family, merely presents his Blue Cross card showing that his hospital care is prepaid then turns over in bed and forgets the cost and attendant worries over the same and concentrates on the business of recovery. The patient never sees the bill and knows that the hospital is going to do its best by him because payment of his bill is assured by the Blue Cross.

#### *The Physician*

The attending physician benefits by Blue Cross prepaid hospital service also for it relieves him of the oft times delicate problem of answering the patient's anxious queries as to hospital costs and financial arrangements for the payment of the same. When the physician tells a Blue Cross patient that hospitalization is necessary the patient readily says, "That is all right with me, Doctor, I have Blue Cross coverage." Payment of his hospital bill, thru the small and reasonable subscription fee he has been paying, assures the patient of care and the hospital of its money. This leaves the physician free to treat his patient for his ills rather than for financial worries.

#### *End Results*

It is obvious that with benefits accruing to the subscriber, the hospital and the physician, Arizona Blue Cross merits the support of all

concerned. The eighty-five other Blue Cross Plans scattered over this country render the same sound service and their growth is indicative of the popularity of the hospital service rendered. Arizona is up front in all these aspects, and has provided a way to remove the economic hazard of hospitalization for those people who have long desired a voluntary and contributory plan by which they may defray their hospital costs without jeopardy to their scale of living. It is a comfort to the subscriber, the hospital and to the physician when a patient is in a position to say, "I have Blue Cross." With the concentrated interest and cooperation of all concerned, some 50,000 Arizonans will be able to voice those words by the end of 1946.

#### THE EYE-BANK

More than half a hundred hospitals in nine states are already cooperating with The Eye-Bank for Sight Restoration, Inc. in a nationwide effort to help restore or remedy the vision of America's estimated 15,000 persons blinded because of corneal affections, it was announced today by Mrs. Henry Breckinridge, executive director of the Eye Bank, 210 East 64th Street, New York.

In Greater New York alone, 32 hospitals are associated in the movement to make available for distribution healthy corneal tissue for those whose sight may be restored through corneal graft operations by which ocular opacity is overcome, the announcement stated.

In addition, 8 hospitals in other New York states cities, together with 6 in New Jersey, 3 in Connecticut and one each in six other states have become actively affiliated with the movement.

Organized only last February, the Eye Bank was established for the collection, preservation and distribution of healthy corneas which may be obtained only from persons either living or immediately after death. Inasmuch as corneas may be preserved and utilized for transplanting to the eyes of others for only 72 hours, speedy collection and distribution is essential as soon as they are obtained. Whenever cooperating hospitals have eyes available, the Red Cross Motor Corps rushes them to the Eye Bank for distribution to persons requiring the corneal graft operation.



In addition to extending this activity to hospitals throughout the United States, the Eye Bank is presently engaged in a nation-wide

effort to obtain support for its work through solicitations for membership and donations of eyes after death.

## ARIZONA MEDICINE

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## Editorials

### Mr. Westbrook Pegler

The following paragraph is taken from Mr. Pegler's syndicated article, appearing in numerous papers, on the subject of "Greed of Contractors in Housing Situation."

Quote:

"I CAN AFFIRM that the best electrician in the United States could be stumped by the crooks composing all of such examining boards (he had been speaking of the California licensing board for electrical contractors), because they may ask such questions as "How High is up" and there is no reviewing authority to smash an outright conspiracy to exclude new contractors. In a similar situation a state law compels doctors entering Arizona from other states to take a stiff examination in stuff that most fresh medical students could pass, but which most doctors forget after a few years, and thereby excludes good men from competing with the established medical gang in a state which has probably the greatest need of additional doctors, and good ones, and whose present complement are on the average about the worst in the country. Some doctors now on the ground thoroughly agree that these estimates of the situation are correct and most of the victims of the racket

in the coming year will be the sick war veterans."

Unquote.

Here we have a variety of "homo sapiens" more commonly designated as an arm-chair strategist, alias newspaper columnist working hard on that much heralded and "pointed-to-with-pride" American heritage, the freedom of the press.

These gentlemen of the press, without the knowledge of a single fact, armed only with a typewriter, can solve any and all of our social, economical, or financial problems. They can balance the National Budget, win every military battle without the loss of a single casualty, and in fact have the answers to all questions, before the questions are even asked. Is it any wonder that the realist Russians turn thumbs down when they try to crash anything that goes on in the Soviet Country?

Freedom of the press in this country is a beautiful thought. But in reality it is the privilege of a few thousand who happen to own a newspaper to express themselves, while a hundred and thirty some odd millions who do not treasure such a possession live on in mute silence. The late President Roosevelt had a name for these champions of the public, excrescences.

## In Memoriam

In the passing of Dr. Victor Strong Randolph of Phoenix on November 6, 1945 at the age of 52, Arizona has lost a leading chest specialist and pioneer in thoracic surgery.

Dr. Randolph was born in Chicago, Illinois; graduated from Milton College, Wisconsin in 1918 and received his medical degree from the University of California in 1923. He came to Arizona in the spring of 1925 to engage in the specialty of Diseases of the Chest, the line of work he followed until his death.

In preparation for the role surgery was to play in the treatment of chest diseases, Dr. Randolph went to Vienna and other medical centers in Europe in 1928, where he took special training in surgery of the chest and thereafter was in the vanguard in the great advances made in that type of treatment.





DR. VICTOR STRONG RANDOLPH

His interests were legion as evidenced by the fact that he had a position of leadership in many different lines of activity. In 1940 he was President of the Phoenix Rotary Club. The medical societies to which he belonged were numerous. Among them were the Maricopa County Medical Society, Arizona State Medical Society, Fellow of the American Medical Association, Fellow of the American College of Chest Physicians, Fellow American College of Surgeons, American Society for Thoracic Surgery, and the American Heart Association. In many of these organizations he occupied a position of responsibility.

Treating tuberculosis being his chief activity, it seemed natural that he should take a position of leadership in the Arizona Anti-Tuberculosis Association. He was President from 1941 until his death. He was also a former Chief of Staff at St. Joseph's Hospital in Phoenix, a member of the Good Samaritan Hospital Staff, and Chief of Staff at St. Luke's Home at the time of his death.

During his college days he joined the Alpha Kappa Lambda Fraternity and the Nu Sigma Nu Medical Fraternity. At the time of his death he was a member of the American Legion, the Phoenix Country Club, and the Arizona Club.

He had a keen interest in Education and was a member of the Phoenix School Board from 1938 to 1944, serving as clerk a portion of that time.

Dr. Randolph won the respect of a wide circle of friends, to which was added a deep affection on the part of those who knew him best. His ability to get along with people was evidenced by the fact that the medical connection which he made on coming to Phoenix 21 years ago still existed at his death.

Although not a prolific writer on medical subjects, he did present a goodly number of well-prepared papers on subjects which he knew so well. He was a scientist of no mean ability and was always in the foreground in the field of his chosen work.

Surviving him are his wife, Claire Tatum Randolph whom he married at Dallas, Texas in 1926; a son Victor Strong Randolph, Jr., and a daughter Caroline Elizabeth Randolph, as well as a sister, Mrs. E. W. Vincent of Chipewewa Falls, Wisconsin and a brother and associate in the practice of medicine, Dr. Howell Randolph of Phoenix.

There are so many things which should be said about a busy life like Dr. Randolph's that one is at a loss to know what to choose—but of them all one can truly say—well done.

FRED G. HOLMES, M. D.

## Veterans Administration

### Public Relations Office

The Veterans Administration will be able to offer more attractive opportunities to doctors, dentists, and nurses interested in helping care for veterans with President Truman's signing today of H. R. 4717, a bill to establish a VA Department of Medicine and Surgery.

VA officials estimate they need approximately 1,125 doctors, 1,200 nurses and 100 dentists to fill present vacancies. Additional positions will open as Army and Navy personnel at VA establishments are released from active duty.

The new act sets up a Department of Medicine and Surgery under a Chief Medical Director to replace the present VA medical set-up under the Civil Service. This act will bring professional personnel into an organization comparable with the Army and Navy Medical Corps and the U. S. Public Health Service. VA officials hope that higher salaries and better

professional advantages will attract a sizeable percentage of the thousands of high grade doctors, dentists and nurses being released from the armed services.

So acute has the shortage of personnel become in VA hospitals and homes that some activities have had to be curtailed and the transfer of seven Army hospitals earmarked for transfer to VA has been hampered.

The new medical department set-up will permit VA to employ applicants promptly to meet the present emergency situation as well as to evaluate and grade all doctors, dentists and nurses on the basis of their professional qualifications.

Among the major provisions of the new act, besides setting up a medical department outside Civil Service, are the following:

(1) Specialists certified by VA will be paid 25 per cent more salary up to a ceiling limit of \$11,000 a year.

(2) Residencies will be set up in VA hospitals where younger doctors may study to qualify as specialists. This will mean that veterans will be able to obtain the most up-to-date medical treatment—the same kind as if they were admitted to hospitals connected with the nation's leading medical schools and centers.

(3) Promotions will be made on recommendations of special VA boards which, in general, compare with the "selection boards" operating in the Army and Navy for higher ranking officers.

(4) Through the establishment of appointment, promotion and disciplinary boards, the legislation will permit VA to have complete supervision of its own professional employees, based upon their professional competence.

In order to overcome the acute personnel shortage, Major General Paul R. Hawley, Acting VA Surgeon General, who is expected to become Chief Medical Director under the new set-up, will need additional professional workers if he is to carry out his plans to give VA one of the most progressive medical programs in the nation.

In the effort to provide the veterans with the best service obtainable, outstanding authorities in specialized medical fields have been appointed to assist General Hawley in establishing high standards of care for disabled veterans. These physicians are serving as con-

sultants. In addition to advising VA, they will nominate leaders in their respective medical and surgical specialties who will be consultants in the 13 Branch areas of the United States to supervise in carrying out professional policies.

Close association with lay medical associations and teaching centers will assure modern scientific medicine in VA establishments, officials pointed out. Employees in the medical department will work with these outstanding specialists.

"Service with the VA offers professional opportunities comparable with the best, not only for qualified specialists but also for those who seek a future in an organization that is committed to the highest principles in American medicine," General Hawley said.

The Administrator of Veterans Affairs, General Omar N. Bradley, will establish the regulations which will replace the Civil Service rules which formerly governed VA professional personnel. The program now coming into operation was first advocated by VA executives in 1922.

Both Generals Bradley and Hawley have advocated the change to a medical department as a means of obtaining the best doctors, dentists and nurses to treat veterans. They advocated extra pay for specialists, the establishment of residencies in VA hospitals, and the right of complete supervision over employment and separation of this class of VA employees on a basis of professional competence. The new act includes all three of these features.

The act approved by President Truman establishes the following divisions under the Chief Medical Director:

(1) Office of Chief Medical Director. The director will be paid a salary of \$12,000 a year. A Deputy Medical Director will receive \$11,500 and Assistant Medical Directors—not to exceed eight in number—will be paid \$11,000 each.

(2) Medical Service.

(3) Dental Service.

(4) Nursing Service. The Director of Nursing Service will receive \$8,000 annually and a Deputy Director, \$7,000.

(5) Auxiliary Service. A chief pharmacist, chief dietitian, chief physical therapist, and a chief occupational therapist in the Auxiliary Service will be paid \$6,000 annually. While the heads of the technical groups are appointed by

the Administrator outside of Civil Service, the technicians working under them will continue to be chosen through existing Civil Service regulations. The act provides that the salary range for hospital attendants shall be \$1,572 minimum to \$1,902 maximum. The former pay scale provided for two grades at approximately these same salaries.

Appointments of key executives will be for a four year term, subject to removal by the Administrator for cause. Re-appointment will be for the same term.

Doctors, dentists, nurses and technicians now employed by the VA will be continued on their present jobs pending determination of their qualifications for appointment in the new medical department.

Another provision of the act which will permit professional improvement of VA medical personnel will allow up to five per cent of such employees to study or do research work for periods of time up to 90 days. This will enable doctors, dentists, nurses and technicians to attend recognized schools or work with the U. S. Public Health Service or other research groups. Officials pointed out that this would enable workers to keep abreast with the very latest developments in their respective fields.

Although they are not subject to selection or promotion by Civil Service, the members of the new VA Department of Medicine and Surgery will be under the Civil Service Retirement Act of 1920 and will receive its benefits.

Other hospital employees in VA hospitals not covered by the new act will continue to be appointed through the Civil Service channels which formerly governed their selection and promotions.

Initial appointments in the higher grades, VA officials explained, may be made for those qualified because of graduate training and professional experience.

The grades and annual full-pay ranges of the positions established by the new legislation are as follows:

#### MEDICAL SERVICE

Chief grade, \$8,750 minimum to \$9,800 maximum

Senior grade, \$7,715 minimum to \$8,225 maximum

Intermediate grade, \$6,230 minimum to \$7,070 maximum

Full grade, \$5,180 minimum to \$6,020 maximum

Associate grade, \$4,300 minimum to \$5,180 maximum

Junior grade, \$3,640 minimum to \$4,300 maximum.

#### DENTAL SERVICE

Senior grade, \$7,175 minimum to \$8,225 maximum

Intermediate grade, \$6,230 minimum to \$7,070 maximum

Full grade, \$5,180 minimum to \$6,020 maximum

Associate grade, \$4,300 minimum to \$5,180 maximum

Junior grade, \$3,640 to \$4,300 maximum.

#### NURSING SERVICE

Assistant Director, \$5,180 minimum to \$6,020 maximum

Senior grade, \$4,300 minimum to \$5,180 maximum

Full grade, \$3,640 minimum to \$4,300 maximum

Associate grade, \$2,980 minimum to \$3,640 maximum

Junior grade, \$2,320 minimum to \$2,980 maximum.

### Office of the Surgeon General

Technical Information Division Washington, D. C. News Notes.

#### WORK OF MEDICAL DEPARTMENT IN WORLD WAR II

In his Biennial Report to The Secretary of War, General George C. Marshall, Chief of Staff of the United States Army, paid tribute to the Medical Department for its outstanding work in World War II, as follows:

"The remarkable reduction in the percentage of the deaths from battle wounds is one of the most direct and startling evidences of the great work of the Army medical service. In the last two years Army hospitals treated 9,000,000 patients; another 2,000,000 were treated in quarters and more than 80,000,000 cases passed through the dispensaries and received outpatient treatment. This tremendous task was accomplished by 45,000 Army doctors assisted by a like number of nurses and by more than one-half million enlisted men, including battalion-aid men, whose courage and devotion to duty under fire has been as great as that of the fighting men they assisted.

"One of the great achievements of the Medical Department was the development of penicillin therapy which has already saved the lives of thousands. Two years ago penicillin, because of an extraordinarily complicated manufacturing process was so scarce the small amounts available were priceless. Since then mass production techniques have been developed and the Army is now using 2,000,000 ampules a month.

"Despite the fact that United States troops lived and fought in some of the most disease-infested areas of the world, the death rate from non-battle causes in the Army in the last two years was approximately that of the corresponding age group in civil life — about 3 per 1,000 per year. The greater exposure of troops was counter-balanced by the general immunization from such diseases as typhoid, typhus, cholera, tetanus, smallpox, and yellow fever, and, obviously, by the fact that men in the Army were selected for their physical fitness.

"The comparison of the non-battle death rate in this and other wars is impressive. During the Mexican War, 10 per cent of officers and enlisted men died each year of disease; the rate was reduced to 7.2 per cent of Union troops in the Civil War; to 1.6 per cent in the Spanish War and the Philippine Insurrection; to 1.3 per cent in World War I; and to 0.6 per cent of the troops in this war.

"Insect-borne disease had a great influence on the course of operations throughout military history. Our campaign on the remote Pacific Islands would have been far more difficult than they were except for the most rigid sanitary discipline and the development of highly effective insecticides and repellents. The most powerful weapon against disease-bearing lice, mosquitoes, flies, fleas and other insects was a new chemical compound known as DDT. In December 1943 and early 1944, a serious typhus epidemic developed in Naples. The incidence had reached 50 cases a day. DDT dusting stations were set up and by March more than a million and a quarter persons had been processed through them. These measures and an extensive vaccination program brought the epidemic under control within a month. Shortly after the invasion of Saipan an epidemic of dengue fever developed among the troops. After extensive aerial spraying of DDT in mosquito-breeding areas, the number of new cases a day fell more than 80 per cent in two weeks. The

danger of scrub typhus in the Pacific Islands and in Burma and China was reduced measurably by the impregnation of clothing with dimethyl phthalate.

"The treatment of battle neurosis progressed steadily so that between 40 and 60 per cent of men who broke down in battle returned to combat and another 20 to 30 per cent returned to limited duties. In the early stages of the war less than 10 per cent of these men were reclaimed for any duty.

"The development of methods of handling whole blood on the battlefield was a great contribution to battle surgery. Though very useful, plasma is not nearly as effective in combating shock and preparing wounds for surgery as whole blood. Blood banks were established in every theatre and additional quantities were shipped by air from the United States, as a result of the contribution of thousands of patriotic Americans. An expendable refrigerator was developed to preserve blood in the advance surgical stations for a period of usefulness of 21 days.

"So that no casualty is discharged from the Army until he has received full benefits of the finest hospital care this Nation can provide, the medical service has established a reconditioning program. Its purpose is to restore to fullest possible physical and mental health any soldier who has been or fallen ill in the service of his country.

"To insure that men are properly prepared for return to civilian life the Army established 25 special convalescent centers. At these centers men receive not only highly specialized medical treatment, but have full opportunity to select any vocational training or recreational activity, or both, they may desire. Men, for example, who have been disabled by loss of arm or legs are fitted with artificial limbs and taught to use them skillfully in their former civilian occupation or any new one they may select. Extreme care is taken to insure that men suffering from mental and nervous disorders resulting from combat are not returned to civil life until they have been given every possible treatment and regained their psychological balance."

#### GENERAL MACARTHUR PAYS TRIBUTE TO MEDICAL SERVICE

General Douglas MacArthur, in an article in



a recent issue of *The Journal of Military Medicine in The Pacific*, made the following remarks concerning the part played by the medical services in World War II:

"War through the ages has demanded in large degree the help of those who practice the art of healing. Never has such need been greater than in the Pacific. Early in the campaign disease presented its most serious threats. Vigorous action has eliminated much of that hazard. The application of old principles and newly devised measures on a magnified scale has assured our advance against the hazards of nature.

"Almost impenetrable terrain and vast distances have not prevented our doctors from pressing close to the enemy lines to give the wounded immediate care. Air evacuation reached its highest development in transporting casualties from the field to hospitals far in the rear. New drugs have accomplished miracles in treatment. And in consequence the command has maintained in a gratifying state of health with the rate of recovery of the sick and wounded unsurpassed.

"The *Journal of Military Medicine in the Pacific* is a commendable endeavor to disseminate valuable information and has my approval and best wishes for success. Without health—physical, mental and spiritual—there can be nothing."

#### GENERAL SOMERVELL REPORTS ON MEDICAL DEPARTMENT

In his annual report to the Under Secretary of War and the Chief of Staff, General Brehon Somervell, Commanding General, Army Service Forces, made the following remarks concerning the Army Medical Department:

"The American Army is the healthiest army in history.

"Unbelievable strides have been made by Army doctors even as the war progressed, not only in surgery and care of the sick but in preventive medicine.

"Bold and successful use of sulfanamides and penicillin reduced the fatality rate of meningitis from 38 per cent in the first World War to three per cent in 1944, pneumonia from 24 per cent to 0.7 per cent, dysentery from 1.5 to only one recorded death. Deaths from malaria have dropped to an astounding low. In 1917-1919

there were 0.2 deaths per hundred cases . . . today the number is 0.06 per hundred.

"Great advances were made in the fiscal year in the uses of whole blood and penicillin. In North Africa the Army doctors discovered that blood plasma, although it did have a remarkably beneficial effect, could not substitute for whole blood in cases of the most severe shock. Blood banks set up in the United States sent 206,000 pints of whole blood to overseas theaters in nine months.

"Penicillin, for all its value, originally had shown a tendency to disappear from the blood stream after a few hours. In order to retain its effect, Army doctors worked out a method of suspending it in beeswax and peanut oil. Given hypodermically in this combination, penicillin remained in the blood for as long as twenty hours and destroyed disease germs.

"New methods of surgical care were perfected in the fiscal year. 'Phasing' of treatment was introduced. Care of the wounded was divided into three distinct phases. The first phase took place on the battle front, where surgeons and first aid crews gave emergency treatment. Patients then were evacuated, more swiftly than ever before, to hospitals in the Communications Zone. Much of this evacuation was done by air. It was not unusual for men who could be moved to undergo their emergency treatment within the sound of guns and eight or few hours later be in bed in hospitals five hundred miles behind the lines. There the second phase . . . "reparative surgery" was undertaken. Again men were evacuated swiftly as soon as they were able to be moved safely to hospitals in the United States. Here the final phase of surgical reconstruction and rehabilitation was undertaken.

"The results are apparent in the lowest mortality rate in the history of any army in the world . . . 4.3 per cent of the wounded.

"DDT, the magic chemical produced in vast quantities for the Army, halted many plagues among civilian populations and prevented plagues in the Army by destroying insects and vermine. The entire population of Naples underwent DDT treatment, their clothing and bedding being sprayed, and dangerous epidemics were halted before they had a chance to spread.

"Inspection of foodstuffs is another duty of the Medical Department. Thirty-three million



pounds of food were inspected daily at home and overseas.

"Forward steps in the neuropsychiatry treatment resulted in the return to duty in the theatre of operations of 90 per cent of the cases of battle fatigue. Forty to sixty per cent were able to return to combat units. Before the introduction of the new treatment, which occurs immediately behind the front, only ten per cent returned."

#### GENERAL KIRK SPEAKS ON WORLD WAR II CASUALTIES

Sixty-three per cent of the wounds received in World War II were those of the upper and lower extremities, with the lower extremities the heaviest proportion, according to Major General Norman T. Kirk, Surgeon General of the Army, who spoke recently before the Milwaukee Association of Commerce.

"There were 207,754 men of the United States Army killed in action and 571,490 wounded," General Kirk stated. "Of those wounded, 363,322 returned to duty after hospitalization and 25,145 died. These figures indicate that the rate of those wounded who died was nearly twice as great in World War I."

Of the 15,000 amputees of World War II, 14,000 needed artificial limbs, 7,000 of whom still remain in general hospitals. The balance either returned to civilian life or remained on duty as instructors for other amputees, the General continued. There have been two quadruple amputations and nine triple amputations recorded in World War II. Of the 14,000 needing prostheses, 95 per cent have lost one arm or leg, and five per cent have suffered two major amputations.

Outlining the Army's job in medical care and rehabilitation of the wounded, General Kirk also stressed the part of the American public in helping the returned veteran, and concluded, "Too many men in the last war became social derelicts because too little responsibility was assumed by business and industry in placement of the individual in a job commensurate with disabilities. Those men have won the war, now let us help them win the peace."

Attend the  
**ANNUAL MEETING**  
Phoenix, Arizona, May 1-2-3

#### THE JOURNAL OF VENEREAL DISEASE INFORMATION

The Frequency of Positive Serologic Tests for Syphilis in Relation to Occupation and Marital Status Among Men of Draft Age. Lida J. Usilton, Paul T. Bruyere, and Martha C. Bruyere. *Journal of Venereal Disease Information*, Washington, 26:216-222, Oct. 1945.

An analysis based on information concerning occupation and marital status for a random sample of men examined for Selective Service showed that the prevalence of syphilis varies widely among different occupational groups. It also showed that in any occupation group the prevalence of syphilis is substantially higher among single white men than among married white men but the differences between single and married groups among nonwhites was small.

The analysis was based on the results of serologic tests for syphilis performed on 531,236 Selective Service registrants who constituted a 20 percent sample of the men examined from January 1, through May 31, 1945. Blood tests were tabulated according to age, race, marital status, and 11 broad occupational groups.

The prevalence of syphilis among single white men ranged from one or two per thousand for 17-year-old men in each occupational group to approximately 30 per thousand for the 37-year-old men in the professional group, 50 per thousand for proprietors, 45 per thousand for clerical, 45 per thousand for salesmen, 80 per thousand for craftsmen, 80 per thousand for operatives, 85 per thousand for service workers, and 90 per thousand for laborers.

The prevalence rates for married white men were 25 to 50 percent lower than for single white men in corresponding occupational groups. In general among the white men, the differences between the syphilis rate of single and married men were much greater than were the differences between occupational groups, and these differences were least in those occupational groups having the highest syphilis rates.

Among Negro men a tendency for higher prevalence rates among the less skilled occupational groups was apparent but not statistically significant, and no statistically significant difference between married or single groups could be demonstrated.

The rates for the several occupational groups of Negro men ranged from about 20 per 1,000 among 17-year-old single Negroes in the more

highly skilled occupational groups to more than 30 per 1,000 among 37-year-old Negro men in unskilled groups.

Prevalence rates for students were lower than for other groups on the whole. Rates for men other than married or single were compared, as a group, and the comparison showed that white men in this group had significantly higher rates than either the single or the married men in corresponding age groups.

The author conclude that undoubtedly there is a correlation between occupation and the prevalence of syphilis, but that this does not imply a casual relationship; except among the highly trained and the completely unskilled, cultural patterns probably have far greater weight, which may in part explain the differences that are constantly observed in the prevalence rates among different races.

The authors suggest further and more detailed studies to augment this analysis since the sample is fairly small, the population is limited to men subject to draft, and the occupational groups are broad and in several respects unsatisfactory for study in this particular field.

#### THE USE OF SULFONAMIDES IN BURN THERAPY

That the sulfonamides should be used in the treatment of burns was inevitable, for the ever present danger of infection made their trial necessary. Their value seems assured, but the procedure by which they are best used has not been established. Sulfadiazine spray has already been discussed. Powders have caused mechanical difficulties (caking) and have not been ideal for sprinkling over extensive weeping wounds. Further, the size of the raw area could in certain instances allow massive absorption. More recently, however, there have been attempts to vary the size of the sulfonamide particles and more success in this technic may result.

Various dosage forms have been advocated. A dispersion in a water soluble jelly was proposed for use on the hands, face and genitalia and as a first aid application. Robson and Wallace recommended a complex glycerin-sulfonamide paste. Heggie, Gerrard and Heggie reported a number of sulfonamide emulsions. Sulfonamide has been incorporated into a tannic acid jelly and mixed with liquid petrolatum. Allen and his co-workers believed a sulfathiazole ointment using a water in oil base to be of value. They advocated its use in the pressure dressing procedure of Kock in place of petrolatum. Colebrook proposed sprinkling sulfanila-

mide over the burned area and covering it with petrolatum gauze and warm saline dressings. The use of dry sulfonamides as a local measure with saline baths or hot wet dressings and the "tulle gras" procedure has been reported.

Not one of these methods for local application has supplanted in full the procedures discussed elsewhere in this report. The choice depends on individual experience and preference and adaptability to the local measures used. When used locally as a powder, sulfanilamide is preferred by many, while sulfathiazole and sulfadiazine jellies and ointments have their advocates. The only one to be reported as forming an eschar is sulfadiazine. Regardless of these reports, more recent observations have shown that the ideal ointment or emulsion has yet to be devised. If these drugs are used locally, especially in such wide, denuded areas as occur in burns, the same precautions must be taken as are followed when the drugs are given by mouth. The blood picture and urin output are to be followed routinely.

Some investigators have advocated the routine use of one of the sulfonamides by mouth in all burn cases. While there might seem to be some advantages accruing from this procedure, it has been criticized on the basis that nausea and vomiting are frequent and would further add to the hemoconcentration now recognized to occur in burns. Further, these drugs may aggravate or precipitate real or incipient liver damage. If oral administration is ordered, sulfadiazine and sulfathiazole have been the drugs of choice.

#### FIRST AID

If only reddening of the skin has resulted from the burn and the superficial (first degree) nature of the lesion can be definitely ascertained, the application of a soothing ointment may be allowed. When blistering or tissue destruction have occurred and hospital facilities are close at hand, most authorities are agreed that no local medication other than a covering of sterile dressings should be applied or, lacking that, a clean cloth of any nature.

If the burn is extensive (which some have estimated as 20 per cent of the body surface), anti-shock treatment is imperative and should include the administration of morphine and an avoidance of everything which might cause fluid or plasma loss or exudation. If hospital admission is delayed, the first intravenous plasma (solution of crystalloid substances such as dextrose or sodium chloride may be actually harmful) should be begun if at all practical; 500 cc. may be given without waiting for blood studies. Greasy applications are avoided by many on the grounds that they produce only moderate alleviation of pain (a function better performed by morphine) and add to the difficulties of properly cleansing the burned area.

Oils and greases make necessary vigorous handling and the use of fat solvents, procedures which may precipitate or increase shock. Further, the presence of grease makes difficult the formation of an eschar. On receiving an emergency call the physician may advantageously warn his informant or the victim's helpful neighbor to put nothing on the wound before his arrival and, on learning of the severity of the case, have the hospital informed that an emergency room will be urgently needed.

If the patient cannot be transferred to a hospital for several hours (twelve to twenty four) some form of local dressing may be necessary. Such dressings should aim at preventing external loss of fluid, relieving pain and preventing further contamination. Whatever the individual preference for local application, shock treatment is even more imperative under these conditions than if a hospital is readily available.

#### SUMMARY AND CONCLUSIONS

A review of the literature brings out two basic principles which serve as guides to the proper local care of a burn. First, properly applied, many of the more established local measures may give good results if the systemic care of the patient is adequate. Second, gentle cleansing and no unnecessary debridement of the burned area is essential for the successful application of any of the local methods of burn therapy. Under certain conditions, as a life saving measure or the necessity of handling large number of cases in a short time, the preliminary cleansing may have to be shortened. If infection occurs, prolonged healing time and poor functional results may ensue.

A pronounced change in medical opinion regarding the use of tannic acid and other tanning agents has become apparent. The possibility of disastrous results following the formation of an eschar should always be kept in mind when the burn area is on the face, hands or genitalia. If escharotics are used, those producing a thin, tough, flexible eschar rapidly are preferred by some, although those producing similar eschars more slowly may possess certain advantages, which will result in their selection in many cases.

For those areas an escharotic is contraindicated, or for infected burns, a number of variations of the saline bath are available. Of these, the continuous saline bath, the Bunyan envelope and the tulle gras dressing have their advocates. They are usually used with the local application of a bacteriostatic agent, as one of the sulfonamides, electrolytic sodium hypochlorite or Dakin's solution.

The use of the pressure dressing as advocated by Kock reveals interesting possibilities and its use has become very popular.

*The use of growth stimulating agents has not been adequately studied, and much work remains to be done in this field. None have been accepted by the council on pharmacy and chemistry.*

*The widespread use of the sulfonamides, both locally and orally, marks a definite trend in the treatment of burns; they offer promise for the prevention and treatment of infection. However, prolonged use of these agents may cause sensitization. This is a danger that should be kept in mind by all physicians. In concluding this discussion it is well to point out that no method which has been presented to date makes the proper cause of burns anything but tedious and time consuming procedure, the results of which are frequently disappointing. The alternatives are clear: High mortality and morbidity, loss of function and disfiguration for the patient. The responsibility of any individual or group attending a burned patient is obvious. Further, one of the commonest errors in the treatment of burns is understanding the extent and seriousness. All burns should be regarded as potentially serious wounds.*

In no instance should local treatment replace the prevention and treatment of shock, prophylaxis against tetanus and possibly gas bacillus infection and proper surgical procedures when indicated.

The comparative evaluation of the various treatments proposed for burns would be made more accurate if proper records always were kept and published. Boyce has stressed the inadequacy of most records. Harkins has posed four pertinent problems: 1. What is the longest possible interval after a burn that tanning therapy can be applied under optimum conditions? 2. What percentage of plasma does tanning prevent? 3. Assuming that the main purpose of the tanning method is to conserve plasma, if plenty of plasma is available, is tanning still advisable? 4. Is tannic acid toxic? At least one other may be proposed: What is the best means of hastening the sloughing stage of deep burns, promote maximum healing and still prevent infection? Similar questions proposed by many authorities emphasize that more critical observations, well documented and controlled, are needed. In reporting results care should be taken to record the site, extent and depth of the burn, the incidence, degree and location of infection, the physiologic state of the patient as indicated by blood and urine studies and kidney and liver function test, the nutritional state of the patient and his age. The effectiveness of newer antiseptic agents and their effect on the patient should be determined. Statistical evaluation would be desirable, and the utilization of proper controls should not be forgotten in investigational work.

—Reprinted from the A. M. A. COUNCIL ON PHARMACY AND CHEMISTRY REPORTS, 1944.



## THE ROLE OF TRAUMA IN ACUTE CORONARY THROMBOSIS

A Clinical Study of 200 Cases.

GEORGE A. RACE, M.D., NEW YORK CITY

(From the First Medical Division, City Hospital, Welfare Island, Department of Hospitals)

There is much controversy at present regarding the role of trauma as a causative factor in acute coronary thrombosis. There have been many reports in the literature, such as that of Fitzhugh and Hamilton,<sup>1</sup> in which a sudden, dramatic, indirect injury was followed immediately by the typical syndrome of squeezing substernal pain with radiation to the shoulders and down the arms, dyspnea, cyanosis, lowered blood pressure, and the general picture of shock. It was, therefore, concluded that the trauma had a direct causative significance in relation to the acute coronary attack. There have been many reports from authors with an opposite point of view. They state, with impressive series of cases, that the role trauma plays in the causation of acute coronary thrombosis is insignificant. One group, Master, Dack and Jaffe,<sup>2</sup> in a series of more than 1,000 attacks, found only 2 per cent definitely associated with severe exertion or trauma. And there have been middle-of-the-roads, such as Phipps,<sup>3</sup> who found that exertion was intimately connected with acute coronary closure in 40 per cent of a series of 437 cases.

Lack of agreement on terminology and definitions is certainly responsible for much of the discrepancy. For example, one author will distinguish between walking, moderate activity, and ordinary mild activity. Another will divide his headings between severe physical stress and moderate or usual exertion. One author will include under severe stress exercise, surgery, and general infection, whereas another writer will separate the latter two categories and not consider them as severe trauma at all. Another cause for disagreement is the difficult question of compensation cases. Some writers feel that the history of patients with a personal axe to grind will be colored by their own desire and become, therefore, unreliable. These writers do not include compensation cases in their reports. Other men, although recognizing the possibility of tainted testimony, feel that the picture is not a complete one so long as there is an arbitrary selection of cases.

This report compares a series of 200 cases of acute coronary thrombosis. They have been taken from the records of City Hospitals between the years of 1938 and March, 1945, inclusive. Of the 200 patients, 141 were men and 59 were women. Their average age was 63.4 years. The youngest patient was a man 27 years old and the oldest was a man 89 years old.

The diagnosis of each case was definitely proved either by electrocardiogram or by autopsy, or by both. One hundred twenty-nine cases were confirmed by autopsy and 89 cases by electrocardiogram. There were 34 cases of acute coronary occlusion, proved by autopsy, in which the electrocardiograms showed no evidence of the acute lesion.

The electrocardiographic reports in these cases spoke of disease of the ventricular muscle, overdigitalization or some other toxic factor, or myocardial damage.

In order to eliminate unnecessary and confusing categories, we have divided the circumstances under which the acute coronary thrombosis developed into five main groups: (1) sleep, rest, or other inactive states; (2) mild to moderate but usual activity; (3) unusual or severe exertion; (4) direct physical injury to the chest; (5) no definite history of trauma either solicited or volunteered.

Sixty-two cases developed while the patients were sleeping, at rest, or in an otherwise inactive state. Of these 62 cases, 49 were in bed, 7 were sitting in a chair, and 6 were standing.

There were 25 cases which developed while the patient was engaged in an activity which was mild and not unusual for him. Five patients developed acute attacks immediately after eating. A hospital employee and a housewife were stricken while mopping floors. Ten attacks occurred while the patients were walking. And other attacks followed such activities as shaving, bathing, and cleaning a rug.

There were 5 cases in which the onset of the acute attack was intimately related to a severe and unusual exertion. The first of these cases was that of a 51-year-old mechanic who, after lifting a 100-pound shelf and carrying it several feet, suddenly coughed, developing dyspnea and cyanosis, became nauseated, and vomited. He was brought to the hospital and an electrocardiogram confirmed the diagnosis of acute coronary occlusion. The second case was of a 49-year-old man whose occupation is unknown. The chart states that he was "lifting something" when he was suddenly seized with severe substernal and epigastric pain. The diagnosis was confirmed by electrocardiograms. The third case was of a 62-year-old handyman. Following the lifting of a heavy motor, he developed pain in the upper abdomen radiating to the back. He became nauseated, cold and clammy and was brought to the hospital, where the diagnosis of acute coronary occlusion was established by an electrocardiogram. This patient died and an autopsy revealed massive anterior and posterior myocardial infarctions with a rupture of the interventricular septum. In the fourth case, the trauma was more remote. The patient was a 70-year-old W.P.A. inspector who, ten days before admission to the hospital, had walked two miles. During the exertion, which was unusual for him, he experienced a severe attack of precordial pain. Four days later he developed a more severe prolonged precordial pain which continued for several days and finally caused him to seek admission to the hospital. The diagnosis of acute coronary occlusion was established by electrocardiograms. The fifth patient was a 44-year-old man who worked on a moving van.

While he was carrying a heavy object, he was suddenly seized with a choking sensation, became dyspneic, and broke out in a sweat. The diagnosis

of acute coronary closure was made by electrocardiogram.

In the series of 200 cases, there was not a single instance in which the acute coronary occlusion was due in any way to a direct blow to the chest wall.

In 108 cases, no definite history of trauma was either solicited or volunteered. It was felt that in this group the lack of positive evidence of severe trauma was not sufficient basis for assuming that such trauma did not occur. Possibly, investigation concerning this point was not sufficiently thorough. Since more than half of these cases, taken from a large, active, general hospital, had inadequate histories, it was thought that the use of the following standard list of questions might be of value:

1. Was there an acute attack?
2. What were the symptoms of the acute attack?
3. How long did the symptoms last?
4. What medication was used for the attack?
5. What time did the attack occur?
6. What was the patient doing at the time of the onset of the attack?
7. Was the attack associated with a recent heavy meal?
8. Had there been any severe exertion by the patient over the previous forty-eight hours?
10. Had there been any direct recent injury to the chest wall?
11. Does the patient consider himself nervous?
12. Had the patient had any severe emotional disturbances over the previous forty-eight hours?
13. Did any complications arise concomitant with the attack?
14. What were the pre-existing medical complications?
15. Will the patient receive compensation benefits from this hospital sojourn?

It should be stated that in not one of the 200 cases was there a question of compensation. This particular difficulty, therefore, was obviated.

A suprisingly large number of cases did not have an acute episode. In 130 cases the infarction was associated with the acute picture but in 70 of the cases the acute symptoms were lacking. In 54 of these 70 cases the diagnosis was established only by autopsy; in 11 cases the electrocardiogram gave the diagnosis; and in 5 cases the electrocardiographic evidence was borne out by the autopsy findings.

#### SUMMARY

1. Two hundred cases of acute coronary occlusion are reviewed. In no case was compensation involved. There were 141 men and 89 women, whose average age was 63.4 years.

2. Sixty-two cases developed while the patients were sleeping, at rest, or in an otherwise inactive state; 25 cases developed while the patients were engaged in an activity which was mild to moderate, and not unusual for them; 5 cases were intimately associated with severe exertion; in no case was

there direct injury to the chest; and in 108 cases no definite history of trauma or exertion was solicited or volunteered.

3. In 130 cases the coronary closure constituted an acute episode; in 70 cases the attack was silent.

4. For cases of suspected acute coronary occlusion, a standard list of questions is presented. It is hoped that its use may lead to more accurate history taking and more rapid diagnosis.

5. The discrepancies of existing classifications of activity are noted and a simpler nomenclature is suggested.

Thanks are due to Dr. Walter Bensef for his kind encouragement and helpful criticism in the preparation of this paper.

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- Reprinted from the New York State Journal of Medicine.*

#### THE SPECIALIST AND THE VOLUNTARY MEDICAL SERVICE PLAN MOVEMENT

The voluntary medical service plan movement as sponsored and operated by organized medicine as an alternative for compulsory sickness insurance, is based upon the tenet that physicians' fees should be adjusted to the ability of the individual to pay for medical services. This tenet is recognized by all physicians, general practitioners and specialists.

The subscription rate of each Plan is designed to produce an income to the Plan which will support fees consistent with those payable by persons with below-average income, and the contract of each Plan contains some provision to allow for payment by the subscriber of an additional amount to the physician for services rendered persons with above average income.

Our services as specialists are necessary in maintaining high standards of medical care rendered through these Plans, yet it is not actually possible at this time for Plans operating on an insurance basis to pay a specialist a larger fee than that payable to a general practitioner for a specific service.

This effort to protect the future welfare of medicine as a private enterprise means as much, and perhaps more, to the specialist group than to the general practitioners. The development of the demand for specialists' services has constituted an important factor in the increase in the cost of medical care. Proposed national legislation would fix the fee for specialists' services, regardless of the income of the patient. My plea, therefore, is that members of the specialty groups give full support to the voluntary medical service plan movement, assured that as these Plans gain experience they will be better adjusted to our needs than will any government controlled program.

Henry C. Barkhorn, M. D.

*Reprinted from the Journal of the Medical Society of New Jersey.*



## MANY LIMB INFECTIONS CURED WITH PENICILLIN INJECTIONS

Three New York doctors report excellent results in 24 cases; inter-arterial methods advised in war injuries.

Successful treatment of serious limb infections by administration of penicillin directly into the arteries is reported in *The Journal of the American Medical Association* for July 14. Three New York physicians, S. Thomas Glasser, John Herrlin Jr. and Boris Pollock present what they believe to be the first series of cases in which penicillin was administered by the intra-arterial route.

"The excellent results obtained are noteworthy," the authors say. "These findings assume added importance at this time because 70 per cent of war casualties are associated with wounds in the extremities. An even higher percentage of traumatic lesions (wounds or injuries) of the extremities are observed in war industries. Since these injuries are frequently complicated by infection, a preliminary report on the utilization of penicillin by the arterial route would seem to be timely."

The main advantage of this method of administering penicillin lies in the fact that the drug, injected directly into the artery, is carried by the main blood flow immediately toward the limb and the infected tissues. Also the arterial method results in higher concentration of penicillin in the blood. A drug introduced by any other route, such as by mouth, local application, or injection into a vein or muscle, is diluted before it reaches the infected areas. On the other hand, the intra-arterial method involves the least amount of dilution of the drug, which means that the tissues supplied by the artery which was injected will receive a higher concentration of penicillin than by other means.

Furthermore, the authors point out, in the presence of inflammation due to infection, fluids are passed through the capillaries—the minute blood vessels—much more easily, thus allowing for greater filtration of the drug, which is deposited in greater concentration at the site of the infection and consequently is released slowly to the general circulation. The fixation of the drug in the infected area is even more effective if a tourniquet (constricting band) is applied above the point of injection for ten minutes.

The method was tried in 24 cases of severe types of infection, with emphasis placed on infection occurring in arms and legs as a complication of or hardening of the arteries with or without diabetes. The results obtained were described as excellent. The doctors found that in the absence of pus formation or dead tissue a single injection usually is sufficient for definite improvement or cure. The relief of pain is striking, and many patients have been saved from major amputation. Also in cases where amputation was necessary the stump

could be sewed together successfully even in the presence of infection.

The authors state that their experience prompts them "to suggest the use of this method for war wounds. We believe that many lives and limbs could be saved by the utilization of the arterial route."

Reprinted from the *A. M. A. News*.

## THE PRINCIPLES OF MEDICAL ETHICS AND RETURNING MEDICAL OFFICERS

The Principles of Medical Ethics of the American Medical Association contains two paragraphs of particular significance at this time. An intelligent interpretation of these paragraphs should guide every physician who remained in private practice during the war period.

### *A Colleagues' Patient.*

Section 7. When a physician is requested by a colleague to care for a patient during his temporary absence, or when, because of an emergency, he is asked to see a patient of a colleague, the physician should treat the patient in the same manner and with the same delicacy as he would have one of his own patients cared for under similar circumstances. The patient should be returned to the care of the attending physician as soon as possible.

### *Relinquishing Patient to Regular Attendant.*

Section 8. When a physician is called to the patient of another physician during the enforced absence of that physician, the patient should be relinquished on the return of the latter.

## ANNUAL MEETINGS

The American College of Physicians will resume its Annual Meetings in 1946 and has now definitely chosen Philadelphia, May 13-17, inclusive. Headquarters will be at the Philadelphia Municipal Auditorium, 34th Street below Spruce.

The Meeting will be conducted under the Presidency of Dr. Ernest E. Irons, Chicago, Illinois, and the General Chairmanship of Dr. George Morris Piersol, Philadelphia, Pennsylvania.

## ANNUAL CONTEST

The American Association of Obstetricians, Gynecologists and Abdominal Surgeons Foundation announces that the annual prize contest will be conducted again this year.

For information address—

Dr. James R. Bloss, Secretary  
418 Eleventh Street  
Huntington 1, West Va.

# *Annual Meeting*

PHOENIX, ARIZONA

MAY 1-2-3, 1946

**WESTWARD HO HOTEL—HEADQUARTERS**



## *Scientific Sessions*

The Faculty of the Baylor University College of Medicine will present a complete Scientific Program; speakers and topics will be released in the near future.

THURSDAY AFTERNOON, MAY 2nd

FRIDAY FORENOON AND AFTERNOON, MAY 3rd

Scientific Round Table Luncheons—FRIDAY

## *Entertainment*

Banquet and Dinner-Dance, Hotel Westward Ho

THURSDAY NIGHT, 8:30 P.M., MAY 2nd

Golf—SATURDAY, MAY 4th

## *Business Sessions*

COUNCIL—THURSDAY, MAY 2nd, 9:30 A.M.

HOUSE OF DELEGATES—FRIDAY, MAY 3rd, 7:30 P.M.

Additional Called Sessions for Both Bodies

The Chest Physicians Will Convene on MAY 1st



**MAKE YOUR HOTEL RESERVATIONS NOW**

## *President's Message*

### WELCOME HOME, VETERAN PHYSICIANS!

It is a pleasure, indeed, to welcome back to practice those members of our Association who have spent the last four or five years in the various branches of the armed services. Small communities, as well as the larger ones, are welcoming the return of their home-town physicians who have been in service—some since 1940. The secretary's office has sent out cards to those known to have returned, the list being printed below. If your name is not included, please notify the Association office at once of your return. By counties, members returned from the armed services are:

COCHISE: Drs.:—C. C. Piepergerdes and Joseph Saba of Bisbee; Dr. Arthur G. Nugent of Douglas.

COCONINO: Drs.—C. C. Creighton and D. W. Kittredge, Jr. of Flagstaff.

GILA: Dr. John C. Aarni of Hayden.

GRAHAM: Dr. F. W. Knight of Safford.

GREENLEE: Dr. Karl Fife of Duncan. re-locating at Lordsburg, New Mexico.

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IN MEMORIAM: Drs.:—Lyle Condell of Safford and Manning Gunter of Globe.

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(See Report of Arizona Delegate, Dr. Jesse D. Hamer, in next issue of Arizona Medicine.)

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### Staff Meetings

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## MARICOPA COUNTY MEDICAL SOCIETY

October 1, 1945

## Toxemias of Pregnancy

1. Obstretical Aspects—Dr. L. Clark MeVay.
2. Medical Aspects—Dr. Ben P. Frissell.
3. Urological Aspects—Dr. M. L. Day.

November 5, 1945

1. Disseminated Lupus Erythematosus—Dr. Louis G. Jekel.
2. Medical Service Plans—Mrs Kitty Coleman.

## ST. JOSEPH'S HOSPITAL, PHOENIX

October 5, 1945

1. Case of Ruptured Spleen—Dr. K. S. Harris.
2. Case of Osteomyelitis of the Spine—Dr. M. W. Merrill.
3. Case of Spinal Cord Tumor—Dr. E. Wade.

November 8, 1945

1. Perforated Meckel's Diverticulum—Dr. K. S. Harris.
2. Case of Sickle Cell Anemia—Dr. Ian Stevenson.
3. Septicemia—Dr. R. T. Phillips.

December 7, 1945

1. Case of Mesenteric Hernia—Dr. M. Cohen.

2. Case of Diaphragmatic Hernia—Dr. J. Wepfer.
3. Basal Cell Carcinoma in an 18-year-old girl—Dr. L. Jekel.

GOOD SAMARITAN HOSPITAL,  
PHOENIX

August 27, 1945

1. Report of Two Cases of Uremia resulting in death—Dr. J. D. Hamer.

November 26, 1945

1. Neurological Complications of Serum Sickness—Dr. J. D. Hamer.

ST. MARY'S HOSPITAL  
STAFF CONFERENCE

October 16, 1945

1. Interesting Diagnostic problem with high eosinophil count—Dr. R. A. Wilson, Dr. S. J. Grauman.
2. Resume of several cases of high eosinophil counts—Dr. Robert Weber.

November 20, 1945

1. Dysgerminoma of the ovary—Dr. M. Semoff.
2. Thecal Cell Tumor of ovary—Dr. R. W. Rudolph.
3. Arrhenoblastoma of the ovary—Dr. H. C. James.

December 18, 1945

1. Relief of Ulcer Pain by Removal of Fractured Xiphoid—Dr. H. Kosanke.
2. Operative Management of Fractured Hips, one with saddle thrombosis—Dr. G. Dixon.

## PIMA COUNTY MEDICAL SOCIETY

November 10, 1945

## SYMPOSIUM

## "THE PRACTICAL USE OF PENICILLIN"

1. Nose and Throat—Dr. E. H. Brown.
2. Diseases of Chest—Dr. E. J. Nagoda.
3. Subacute Bacterial Endocarditis—Dr. C. S. Kibler.
4. Meningitis—Dr. C. M. Witzberger.
5. Venereal Disease—Dr. Boris Zemsky.
6. Pelvic Diseases—Dr. H. C. James.
7. Abdominal Surgery—Dr. R. W. Rudolph.
8. Infection of Bones—Dr. J. B. Littlefield.

December 8, 1945

1. Urological Problems Encountered in the Air Force—Dr. W. G. Shultz.
2. Coeliac Syndrome—Dr. Vivian Tappan.





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## MEDICO-LEGAL SECTION

### IN THE SUPREME COURT OF THE STATE OF ARIZONA

Does Permanent disability exist after the loss  
of the tip of a Phalanx?

The Industrial Commission, after a hearing as provided by law (Article 9, Chapter 56, A. C. A. 1939), made its award in favor of claimant Alex Tapia and against Tovrea Packing Company, a corporation, his employer, and the latter, being dissatisfied therewith, has brought the matter here for review by writ of certiorari.

The facts in this case, briefly summarized, are as follows: The applicant, Alex Tapia, was employed by Tovrea Packing Company at its plant on East Van Buren Street, Phoenix, Arizona. On January 18, 1945, applicant sustained an injury by accident arising out of and in the course of his employment while grinding hamburger. The injury was to applicant's left thumb and resulted in the amputation of the tip or approximately one-fifth of the distal phalange, approximately one-third of the nail,

and the cushion on the end of the thumb. The operation on the finger consisted of trimming off the bone and smoothing it down so that portions of the flesh could be pulled together and sutured to form a cushion at the end. applicant returned to work on February 27, 1945, there being no loss or function of the thumb. Thereafter, the Industrial Commission made its findings and award for a scheduled permanent disability, granting to applicant compensation for temporary disability and additional compensation for permanent partial disability, the latter being based upon finding by the Commission that the injury caused a permanent partial disability, which is scheduled under Subsection (b) of Section 56-957, A. C. A. 1939. The employer filed its petition and application for rehearing on the ground that there was no evidence to support the finding of a scheduled permanent partial disability. The findings and award and decision upon rehearing affirmed the original findings and award.

Finding No. 4 on the rehearing reads as follows:

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"That said injury also caused a permanent partial disability which is scheduled under the provisions of Paragraphs 1 and 6, Subsection (b), Section 56-957, Arizona Code, 1939, and said permanent partial disability is equal to 50% loss by amputation of the left thumb and entitles said applicant to compensation therefor in the sum of \$93.16 for a period of (7½) seven and one-half months."

The respondent assigns this finding as error for the reason that said finding is not supported by, but contrary to, the evidence in that according to the evidence applicant did not lose the distal phalange of his thumb. In support of this assignment of error, respondent offers the following proposition of law:

"The loss of less than substantially all of the distal, or second, phalange of the thumb does not constitute a scheduled permanent partial disability under the provisions of Paragraphs 1 and 6, Subsection (b), Section 56-957, Arizona Code Annotated, 1939."

The question for determination is based upon the construction to be placed on the provisions of paragraphs 1 and 6, Subsection (b), Section 56-957, A. C. A. 1939, as applied to the injury sustained by applicant. Those paragraphs were

relied on and cited by the Commission in its findings as the basis for making the award for permanent partial disability. The pertinent portions of Section 56-957 are as follows.

"(b) Disability shall be deemed permanent partial disability if caused by any of the following specific injuries, and compensation of fifty-five (55) per cent of the average monthly wage of the injured employee, in addition to the compensation for temporary total disability, shall be paid for the period given in the following schedule:

"1. For the loss of thumb, fifteen (15) months."

\* \* \*

"6. The loss of a distal or second phalange of the thumb or the distal or third phalange of the first, second, third or fourth finger, shall be considered equal to the loss of one-half of such thumb or finger, and compensation shall be one-half of the amount specified for the loss of the entire thumb or finger."

The evidence in this case shows that only the tip or approximately one-fifth of the distal phalange of the left thumb of applicant was removed. It is the contention of the petitioner that the provisions of the statute above

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quoted do not authorize the finding made by the Commission that the amount of applicant's thumb which was cut off was equal to fifty percent loss by amputation.

The Commission in its findings and award interprets that statute to mean that the loss of any part of the distal phalange constitutes the loss of the whole.

An analysis of the statutes of other states discloses that the same or similar provisions are contained in those statutes, and have been construed by the courts of New York, Michigan, Maine, Kansas, and Pennsylvania. The construction placed on these statutes by these courts is not only helpful but we believe determinative of the position we should adopt.

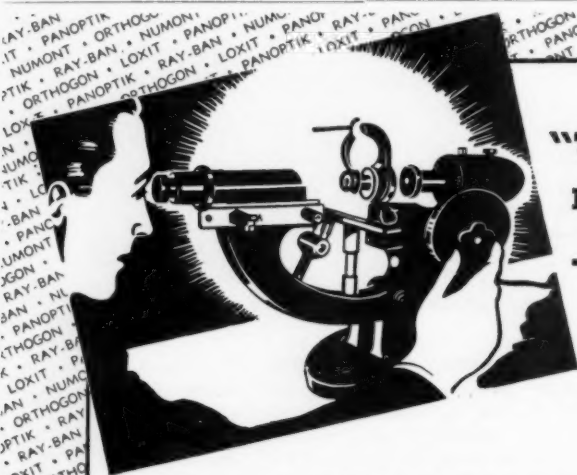
Section 15 of the Compensation Law of the State of New York provides that the "loss of the first phalange of the thumb or finger shall be considered to be equal to the loss of one-half of such thumb or finger \* \* \*."

In the case of *In Re Petrie*, 215 N. Y. 335, 109 N. E. 549, The New York statute was construed for the first time. The Industrial Commission found that the claimant's injury resulted in "amputation of the third finger of

the right hand near the first joint" and that "in the amputation of the third finger about one-third of the bone of the distal phalange was cut off" and on these findings an award was made for the loss of the entire phalange of the finger. On appeal the court held:

"\* \* \* we think we should hold that the provisions of the statute providing compensation for the loss of certain portion of the finger become operative and applicable when it appears that substantially all of the portion of the finger so designated has been lost, \* \* \*"

Since the *Petrie* case was decided, the courts of New York have followed the last-quoted portion of that case as being the rule of construction for their statute, and have consistently held that the provision for compensation for the loss of a certain phalange does not become operative unless that substantially all of the phalange so designated has been lost. See *Ehman v. F. A. Koch & Co., Inc., et al.*, 205 N. Y. S. 698; *Forbes v. Evening Mail, et al.*, 185 N. Y. S. 592. *Tetro v. Superior Printing & Box Co.*, 172 N. Y. S. 722; *Ide v. Faul & Timmins*, 166 N. Y. S. 858; *Thompson v. Sherwood Shoe Co.*, 164 N. Y. S. 869; *Geiger v. Gotham Can*



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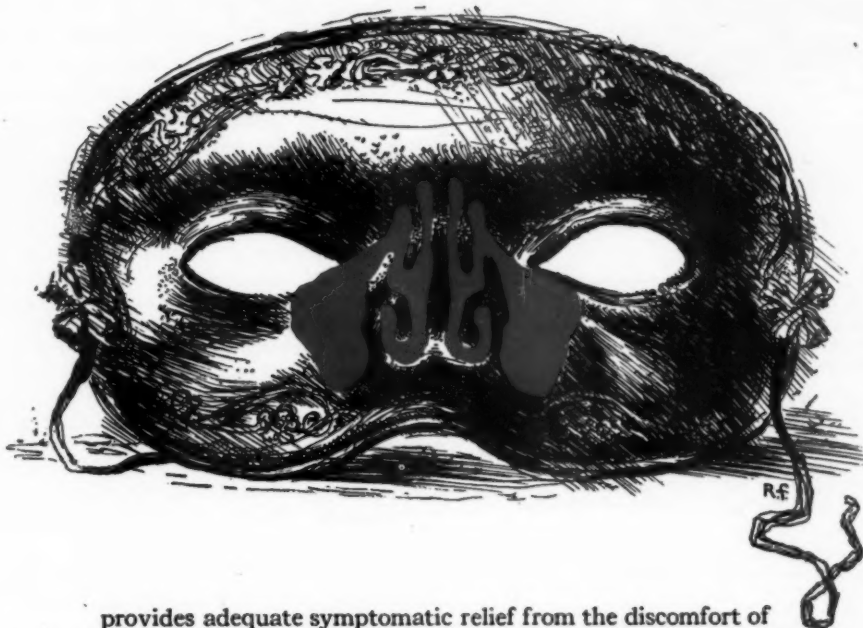
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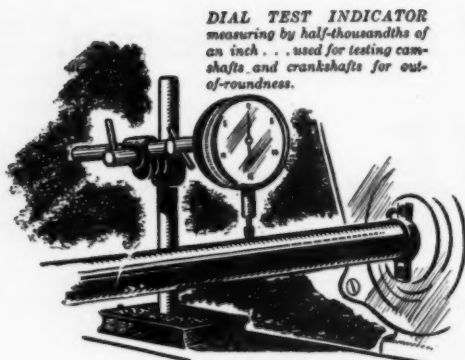
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Co., 163 N. Y. S. 678; Mockler v. Hawkes, 158 N. Y. S. 759.

Section 10, Part 2 of the Compensation Law of Michigan provides:

"\* \* \* the loss of the first phalange of the thumb, or any finger, shall be considered to be equal to the loss of one-half of such thumb, or finger, \* \* \*"

In the case of Packer v. Olds Motor Works, et al., 195 Mich., 497, 162 N. W. 80, the employee sustained an injury which resulted in the amputation of about one-half of the distal phalange of the left thumb and an award was made for the loss of one-half of the thumb. On appeal the court held:

"The statute nowhere provides for the loss of a part of a phalange in its list of specified injuries and presumed disability arising therefrom. Except as to enumerated specific injuries, the compensation is to be proportionate to the extent of the impairment of the 'earning capacity in the employment in which he was working at the time of the accident.' Section 11, pt. 2, Compensation Law. It is obvious that the award by the board of compensation for 33 weeks, which is that allowed by the statute for the loss of an entire phalange, was based upon its determination that claimant had lost the entire use of said phalange. Under our decisions, this award is clearly erroneous."

See also Fanning v. W. E. Wood Co., et al., 255 Mich. 618, 238 N. W. 627; Van Eps v. Sligh Furniture Co., et al., 257 Mich. 112, 241 N. W. 182.

Section 44-510 Gen. St. 1935 of Kansas provides "that the loss of the first phalange of any finger \* \* \*" is to be considered equal to the loss of one-half of the finger or thumb and compensation paid accordingly. In the case of Decieco v. John Morrell & Co., 152 Kan. 601, Pac. (2nd) 1053, the commission had ruled that as a matter of law where any portion of the bone of the distal phalange was amputated it constituted a loss of the entire distal phalange within the meaning of the above-noted section of the Workmen's Compensation Act. The District Court to which an appeal was taken held that a proper construction of that section was:

"\* \* \* the language 'the loss of the first phalange of \* \* \* any finger' means a substantial loss of such phalange, and that a loss of 3/16" of the first phalange of the index finger, with the nail starting to return, is not a loss of the first phalange entitling

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the workman to compensation for loss of one-half of the entire finger. \* \* \*

The Supreme Court of Kansas, after discussing the evidence held:

"\* \* \* We have examined all of the cases cited by both parties as well as others found in our own research. The interpretation placed upon the act by the district court is abundantly supported by the authorities. See 71 C. J. 840, 841, and particularly cases cited in foot notes 37 and 33; \* \* \*"

Section 306 of the Workman's Compensation Act of Pennsylvania, as amended by the Act of 1939, provides:

"\* \* \* the loss of the first phalange of the thumb, or of any finger, shall be considered equivalent to the loss of one-half of such thumb or finger, \* \* \*"

This section of the Act was under consideration in the case of *Vince v. Allegheny Pittsburgh Coal Co.*, 153 Pa. Super. 333, 33 Atl. (2d) 788. This case is substantially on "all fours" with the instant case insofar as the statutory provisions and the evidence submitted to the commission are concerned. The findings were that approximately one-half of the distal phalange of the left thumb of the employee was amputated, instead of approximately one-fifth as in the instant case, and compensation was awarded for the loss of one-half of the thumb. After reviewing the statutory provisions of Pennsylvania and of New York and various decisions construing such provisions, the court held:

"A careful study of this record and the law applicable thereto convinces us that the evidence does not support the findings and conclusions of the board, \* \* \*"

The foregoing decisions holding that compensation is payable if substantially all of a distal phalange is lost constitutes a liberal interpretation of the statute. Such holdings are based upon the proposition that where the loss is of substantially all of the distal phalange, the entire phalange is lost for all practical purposes. We approve of such construction regardless of the fact that it is "the loss of a distal or second phalange \* \* \*" not of a part thereof which is made equivalent to the loss of one-half of the finger. Section 56-957 (b) 6, supra. We hold that it is not necessary that every portion of the first phalange be lost to be Compensable; yet we do hold that it is necessary to show that substantially all of the





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first phalange has been lost. We are content to believe that such a construction of the section is a liberal one, though not sanctioned by the literal wording of the law. To go further would do violence to the plain language of the statute. The statute is always subject to amendment by the legislature. In the exercise of a sound judicial discretion it is important that the law be not amended by judicial construction.

Council for respondents have cited us to several cases which they suggest are authority for the position taken by the Commission. The case of *H. K. Toy & Novelty Co. v. Richards*, 68 Ind. App. 653, 117 N. E. 260 is not in point for the reason that the wording of the Indiana statute is materially different from ours. This distinction is pointed out at length in the case of *Deiceco v. John Morrell & Co.*, 152 Kan. 601, 106 Pac. (2d) 1053. The case of *Macon County Coal Co. v. Industrial Commission et al.*, 367 Ill. 485, 11 N. E. (2d) 925, constitutes no authority for the reason that it is predicated on a statute providing compensation for the loss of use. Additional cases cited by the respondents are: *Royal Canning Corp., et al., v. Ind. Com.*, et al., 101 Utah 323, 121 Pac. (2d) 406; *Brugioni v. Saylor Coal Co., et al.*, 198 Iowa 135, N. W. 470; and *Stareevich v. Central Iowa Fuel Co.*, 208 Iowa 790, 226 N. the same reason, as can readily be determined W. 138. These cases have no application for by an examination of the cases and statutes involved. No useful purpose can be served by an analysis of these cases bottomed on premises wholly dissimilar to that stated in our statute.

Under the evidence, the law, and the rule of liberal construction, the award should be set aside. It is so ordered.

ARTHUR T. LA PRADE,  
Judge.

Concurring:

R. C. STANFORD, Chief Justice,  
JOSEPH H. MORGAN, Judge.

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\**Laryngoscope*, Feb. 1935, Vol. XLV, No. 2, 149-154.  
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\*R. H. Follis, D. Jackson, M. M. Eliot, and E. A. Park: Prevalence of rickets in children between two and fourteen years of age, *Am. J. Dis. Child.* 66:1-11, July 1943.

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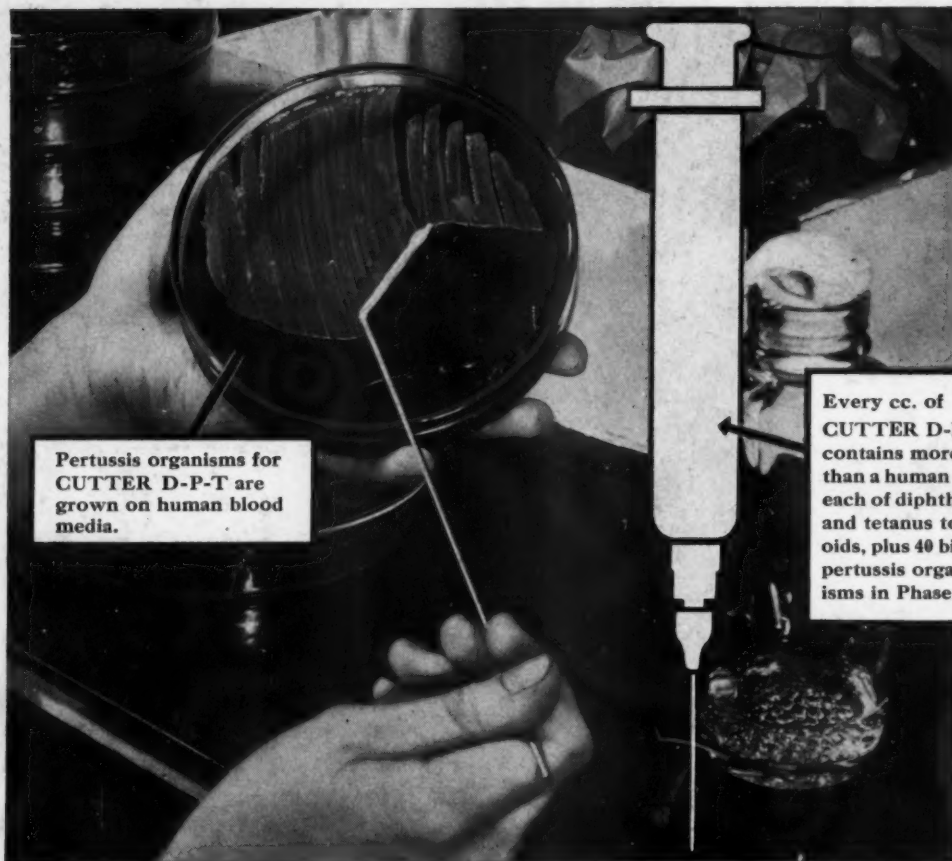
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